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PORT OF LONDON AUTHORITY'S REPORT. *See p.* 127.

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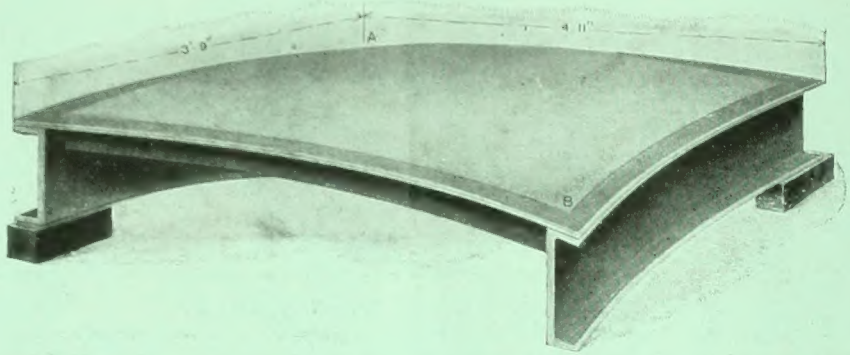

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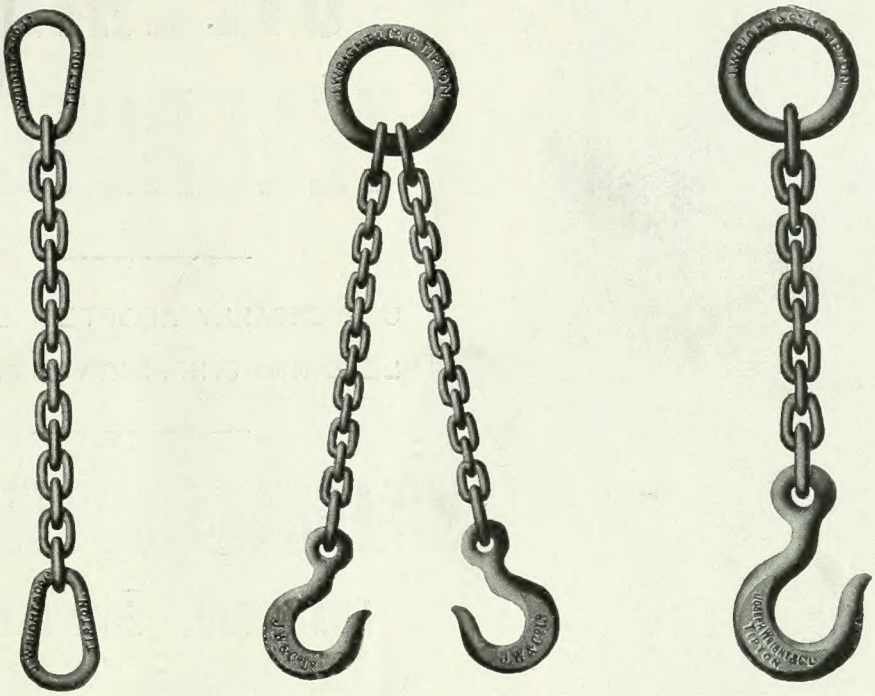

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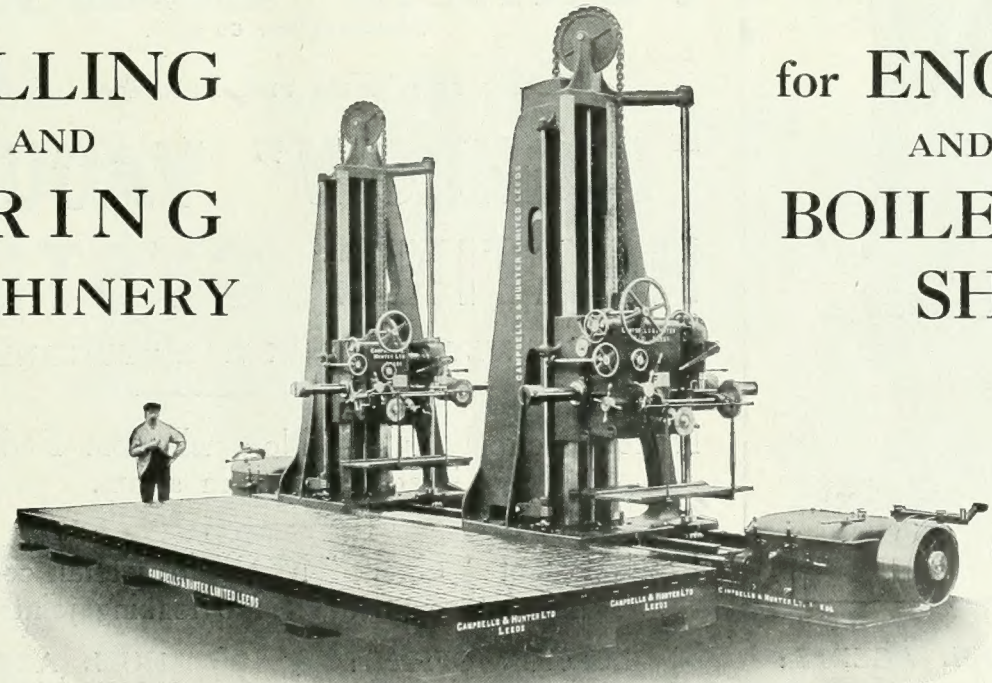

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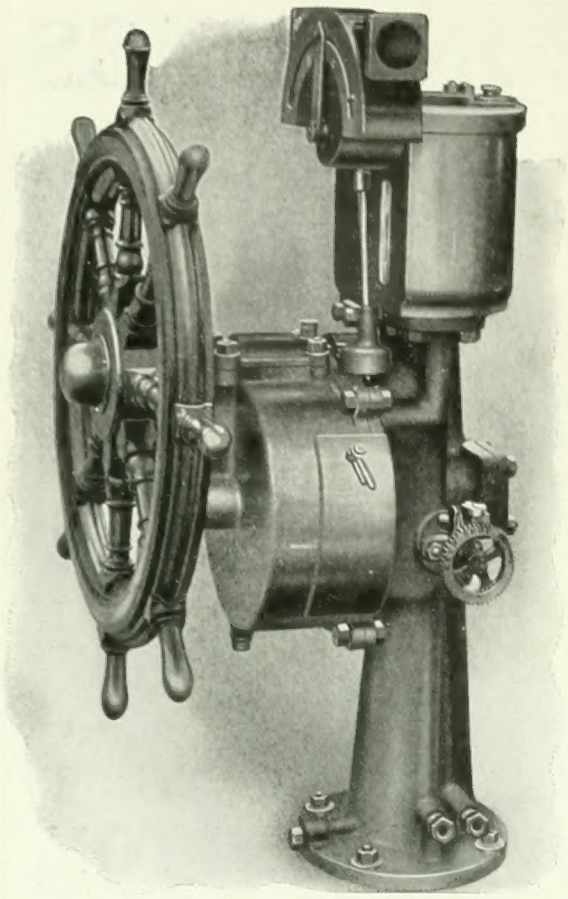

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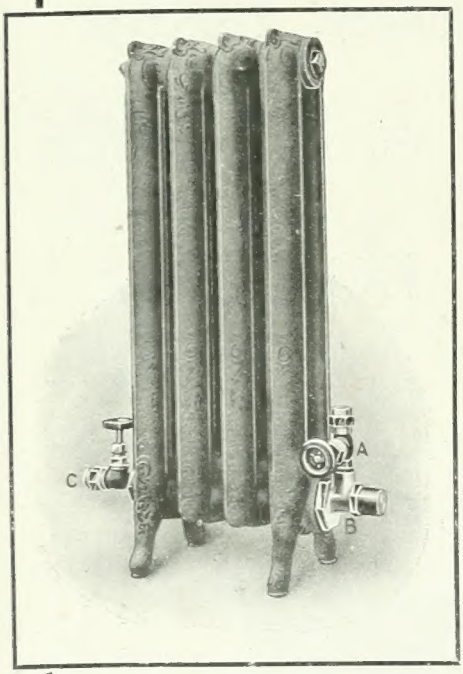

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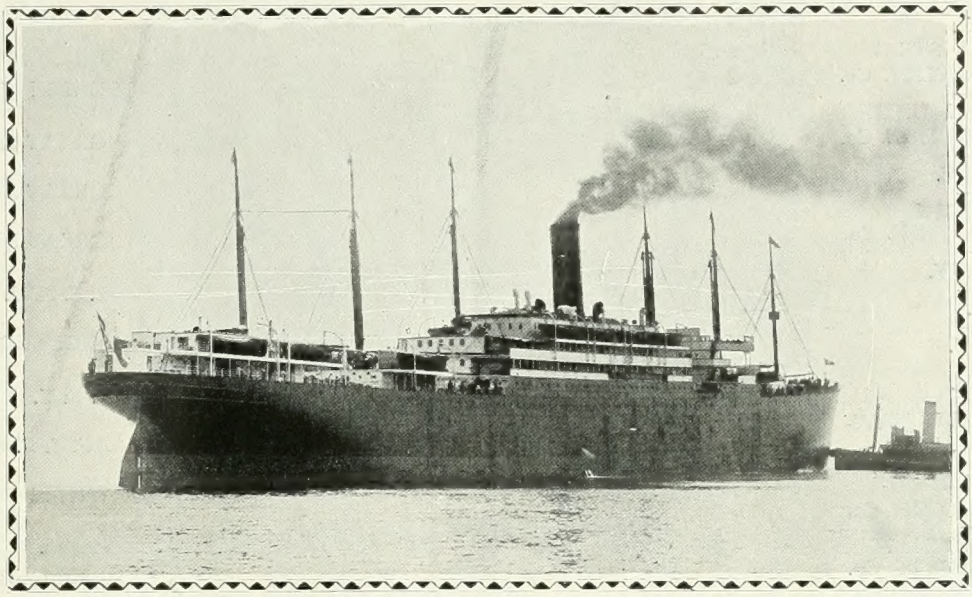

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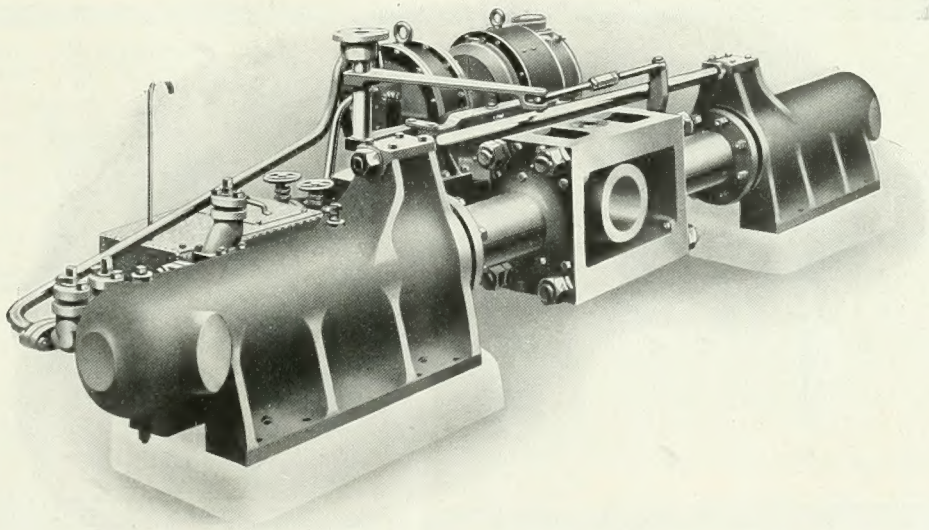

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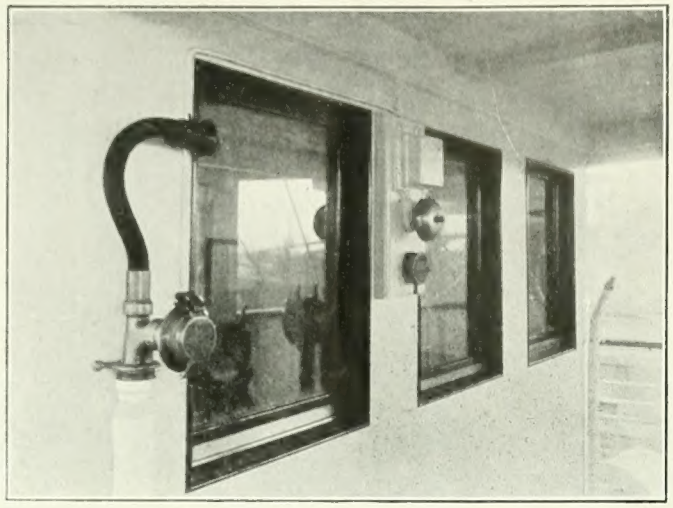

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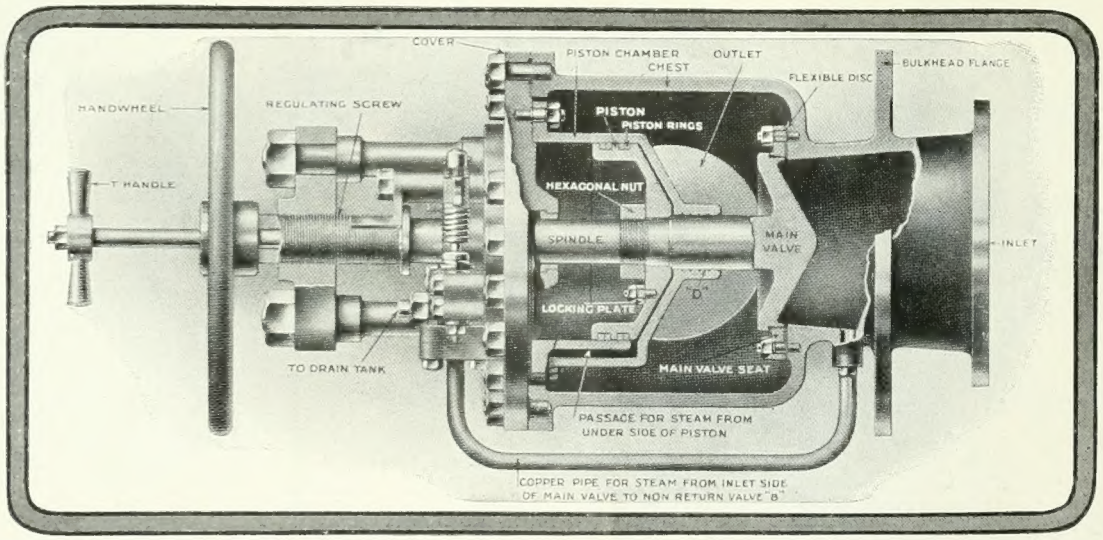

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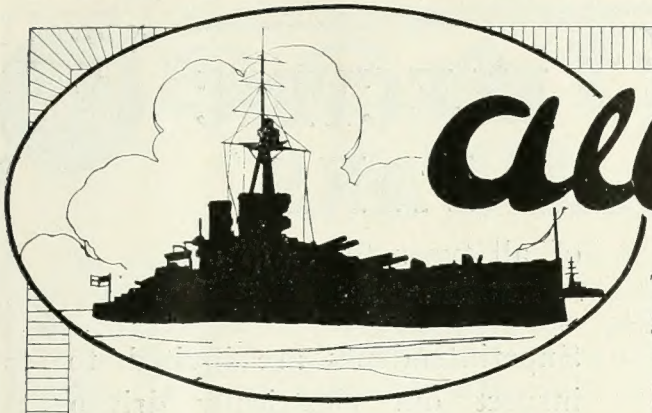

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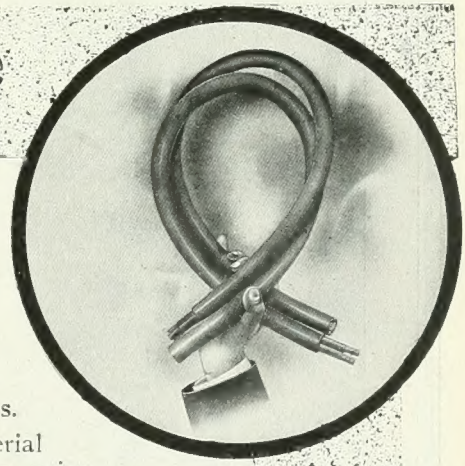

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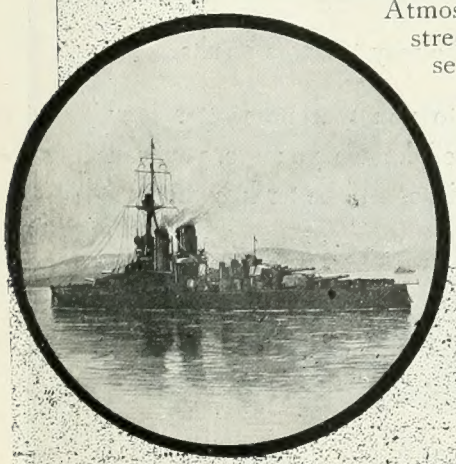

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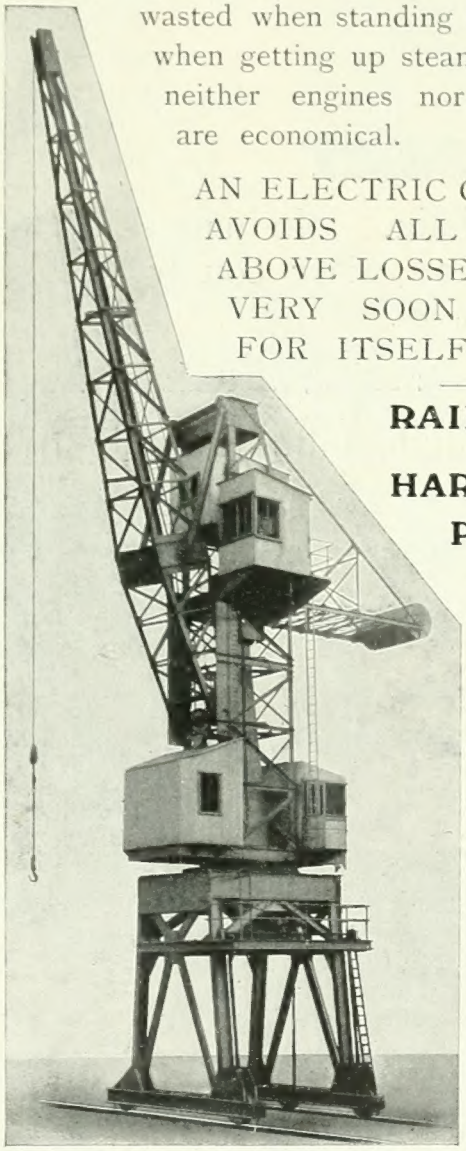

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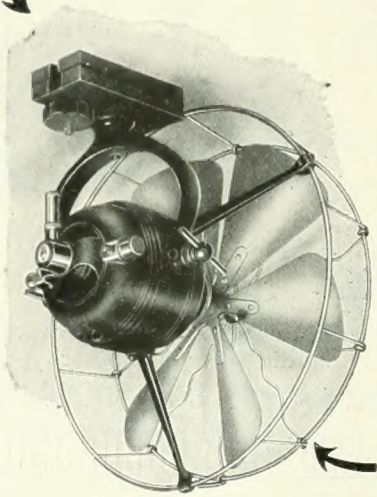

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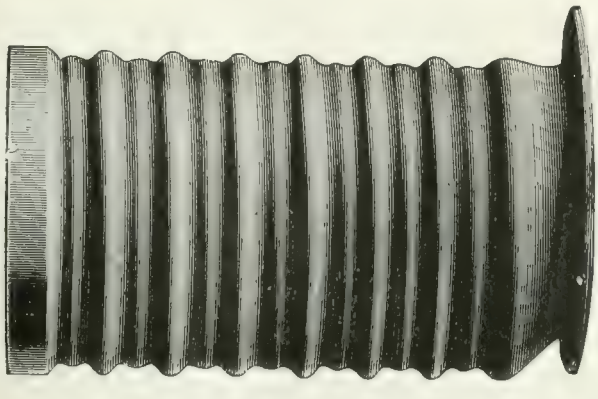

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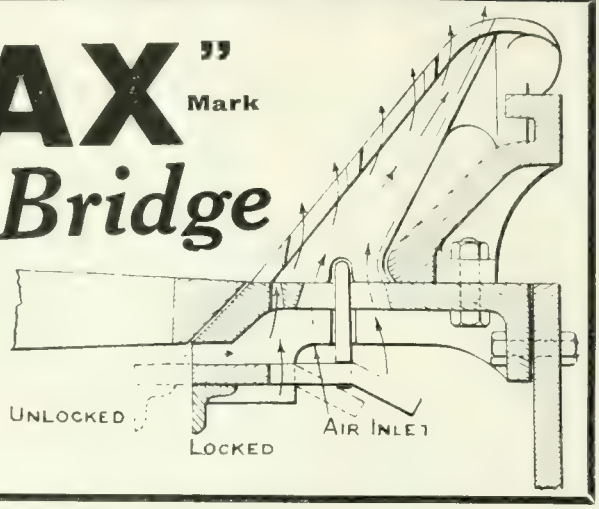

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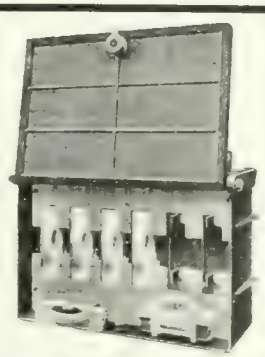

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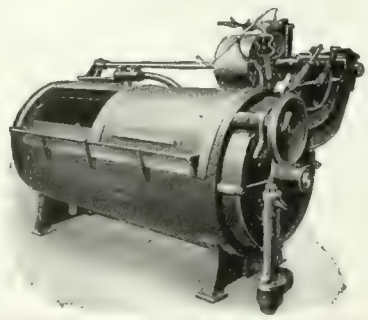

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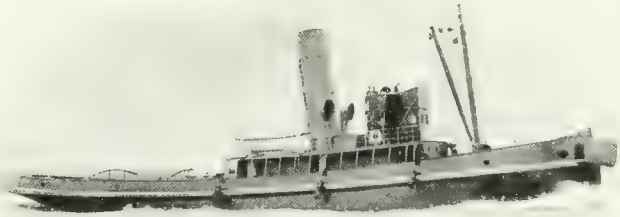

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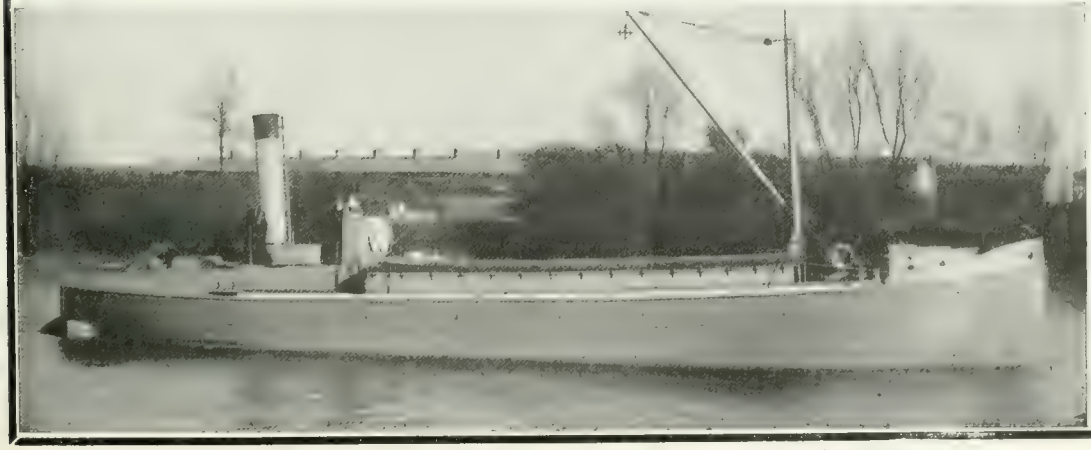

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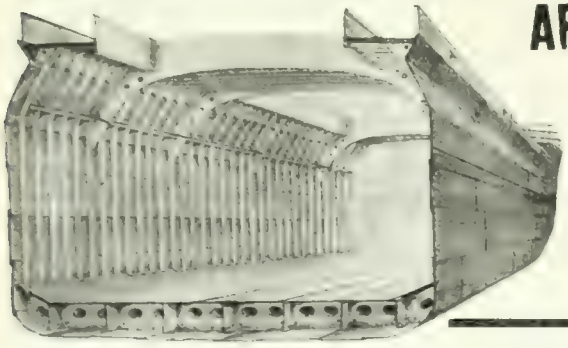

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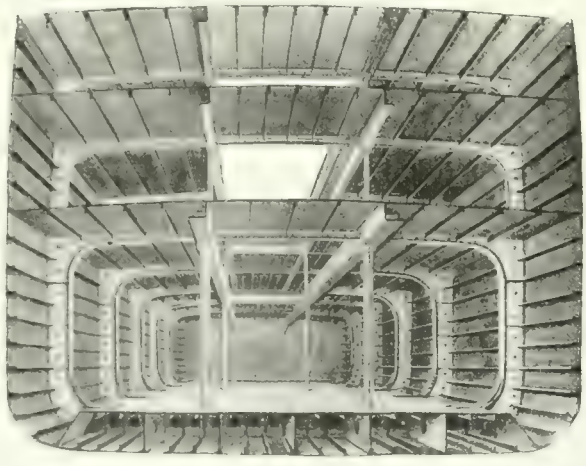

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Submarines of the Future.

FROM the way in which Germans write about the submarine warfare against merchant shipping it would seem that in the opinion of Teutons, Krupp undersea boats are far and away ahead of all others. There is nothing, of course, to justify such a conclusion. The truth is that German submarines are not better than anybody else's—are not, in fact, as good as, let us say, our own. Nor are they really more successful than the corresponding vessels in the fleets of the Quadruple Entente, for the bulk of their "successes" to date have been achieved against vessels which are, according to international law, immune from attack in this particular way. The intended function of the submarine in naval warfare is totally different from that which German vessels of the type are fulfilling. Indeed, the biggest and speediest existing U boat probably belongs to the class which M. Lebeouf some time ago inclined to regard as a compromise effecting nothing. When the type's development is riper there will be two kinds of vessel—one with a surface speed of 23 knots and a submerged speed of 15 or 16 knots, capable of acting with the battle fleet, and the other of less size and speed for use in coastal defence. The later U's come into neither category. They are too slow for fleet work and too big for coastal defence—involving the navigation of shallow inshore waters. As pirate ships on an enemy's commercial maritime communication, they are, of course, fairly efficient. But nothing they have done or may do in that direction is in the true line of the submarine's development; so that it is not to exaggerate their deficiencies but merely to indicate them, to say that the builders and navigators of them are really no wiser than they were a year ago. The Germans did not invent the submarine. Nor can it truthfully be said that they were the first to realise any of the type's possibilities. When this war is over, and naval architects are free to embody its lessons in new craft, it will be found, we frankly think, that far from being the most wonderful submarines in the world, the Germans are almost the least wonderful.

Gallantry Indeed.

The formal announcement that, on the recommendation of the President of the Board of Trade, His Majesty has been pleased to award the silver medal for gallantry in saving life at sea to Leslie N. Morton does bare justice to an outstanding deed of heroism revealed during the hearing of the *Lusitania* inquiry. It was mentioned by Mr. Butter Aspinall, counsel for the owners, and also pointedly referred to by Lord Mersey in his judgment. Morton, who is only 18 years old, was making his first voyage on the *Lusitania*, and previously to that had been on a sailing ship. It was indeed, we believe, his first trip on a steamship also. He in common with others was thrown into the water when the vessel went down. After that he with another man named Parry—who for his valour receives the bronze medal—saw a boat with its cover on, probably a collapsable boat, and swimming to it they unripped the cover and succeeded in saving some 50 lives. These persons were put aboard a smack and the two, with the assistance of others, returned to the scene of the wreck and saved more. It is an example of presence of mind worthy of the best traditions of the sea.

Norwegian Mercantile Marine.

According to the *Norsk Veritas*, the total number of steamers in the Norwegian mercantile marine increased by 4 during the first six months of 1915, but the total capacity decreased by about 12,700 gross tons register. Owing to the war, 15 Norwegian steamers, totalling 27,700 gross tons register, have been lost, and the supply of foreign-built tonnage (amounting to about 53,000 tons during the last five years) has practically ceased since the outbreak of hostilities. The ratio between purchases from and sales to foreign countries of second-hand vessels is practically the same as in 1913, as also is the delivery of new vessels from home yards. The sailing fleet has increased by one in number and by 18,000 tons in capacity, chiefly due to purchase of large steel sailing vessels, among them German vessels sold by this country. An increase of 4 vessels and 1,291 gross tons register is reported under motor ships. The net increase of the Norwegian mercantile marine during the first six months of the year is thus 11 vessels and 6,652 tons register. Up to July 1 last there were under construction or on order in Norwegian yards, 116 steam and motor-ships, totalling 141,615 gross tons register and 96,500 h.p., as against 88 ships and 86,615 tons in the first half and 90 ships and 102,000 tons in the second half of 1914. These figures show clearly the effect of the war on neutral shipbuilding. Up to July 14 last, 30 steamers and 12 sailing vessels belonging to the Norwegian mercantile marine had been lost due to the war, the aggregate insured loss amounting to £700,000.

Russian Steamship Companies.

In consequence of the continuous increase in the prices of the various kinds of fuel, the Russian steamship companies had in 1913 passed through a serious crisis, and the war has now resulted in a still further rise in the value of fuel necessarily affecting the business of that year, including concerns that were occupied in transport work. Besides the temporary disorganisation of the interior transport services, traffic was interrupted on the Black Sea, which deprived several of the companies of what might be called their legitimate business. Many transport concerns which had immediate relations with Poland, in consequence of the extraordinary situation there, were obliged either to completely stop their services or to reduce them to a minimum. All these circumstances had their influence on the transport business of the country in general. Still the results at the close of the year have not been so bad as might have been expected. It is sufficient to show that out of the results published of twelve transport companies and steamship concerns that are quoted on the Petrograd Bourse, only one of them closed the year with a loss, whilst all the others had relatively good reports. Notwithstanding the unfavourable

A number of these companies did very well, and some of them paid very good dividends. Thus, the Okean paid 12 per cent. (14 per cent. in 1913), the Samolhet 10 per cent. (10 per cent.), the Russian Transport Company 6 per cent. (7 per cent.), the Vyatka Volga Company 6 per cent. (nil), the Russian Eastern Asiatic Company 5 per cent. (12 per cent.), the Petrograd Warehouses Company 5 per cent. (5 per cent.), the Volga 6 per cent. (1 per cent.), the Eastern Warehouses Company nil (6 per cent.), Gerard & Hey nil (10 per cent.), the Volga Steamship Company and the Kavkas & Mercury nothing in either year. Seven concerns yielded relatively high dividends, and the decline in the business of Messrs. Gerard & Hey is said to have been due to the complete stoppage of the firm's business with Germany owing to the war.

Australian Pilotage.

When the control of the lighthouses on the Australian coast was taken over by the Commonwealth Government last year, the Minister for Customs announced that a levy of 8d. per ton (net registered tonnage) would be made in future upon all vessels using the lights. Numerous protests against these high charges were immediately raised by shipping companies, chambers of commerce, and port authorities. The objections from Tasmania were particularly strong, as the majority of the ocean steamships which call at Hobart pass only two of the lighthouses on their way to and from New Zealand. The dues payable on ships of between 7,000 and 8,000 tons calling at Hobart would be raised from £25 to £261 per voyage. Under pressure from many of its own supporters in both Houses of the Federal Parliament, the Government has consented to a reduction of the charges—which still, however, remain relatively high. On ships of less than 4,500 tons the rate of 8d. per ton is retained, and for vessels of that tonnage and more a lump sum of £150 must be paid. On ships less than 4,500 tons calling at only one port and bound for a destination outside Australia the rate is reduced to 4d. per ton, and for vessels of that size or more a lump sum of £75 is payable. The new rates came into force on July 1. State-owned ships are exempted from payment of dues, as are also ships calling for coal, and ships in ballast without passengers.

Pacific Activity.

Several references have been made of late in these columns to the shipping trade of the Pacific, and we make no apology for again returning to the subject, not only because of its importance, but also owing to the temporary suspension of many British sailings and increased activity on the part of the Japanese. As a matter of fact, a situation is gradually developing which will demand the serious attention of British companies when conditions are again normal, and, indeed, circumstances may render it necessary to deal with it before that time arrives. Since the withdrawal of effective British competition, and the lack of a United States mercantile marine in the foreign trade of the Republic, control of shipments on the trans-Pacific routes is falling into the hands of Japanese steamship lines, which are taking advantage of the virtual monopoly thus obtained to raise freights, which, in fact, have in three months been advanced on certain goods from China to New York, via Panama, from 35s. to 65s. a ton, the rate from Japanese ports to San Francisco having also been nearly doubled during the same period. The trouble, however, is that by order of the Government all the space on Japanese subsidised vessels has been reserved for Japanese shippers, while contracts entered into with those of other nationalities have been revoked, which, of course, will have the effect of benefiting Japanese at the expense of foreign traders. In this way the Japanese concerns are not only bound to realise a large immediate profit, but they may also obtain a hold in certain trades which may become permanent. At the moment, the question of releasing a number of vessels from war service so as to cover the requirements of Canadian traffic is under consideration by the Imperial and Dominion Governments. Would it not be advisable to take action of the kind with a view to the protection of British shipping interests on the Pacific?

Detention at Italian Ports.

Losses arising out of the detention of vessels at Italian ports have been frequent ever since the outbreak of hostilities, and with the entry of Italy into the theatre of war it is becoming increasingly important for shipowners to protect themselves. The British Steamship Owners' Association, in their last quarterly report, recommend members entering into charter parties for the carriage of cargoes to Italian ports to expressly add in the clause providing for delivery of cargo, that difficulties arising out of congestion consequent upon the war are not to be considered as exceptions to the lay-time of the steamer. It is pointed out that recently a Royal decree was issued in Italy, Section 1 of which provides that the war is to be considered as a case of *force majeure*, not only when it renders the fulfilment of the obligation impossible, but also when it will become excessively onerous to fulfil the obligation, provided that the obligation was undertaken previously to the decree of mobilization of the Army, *i.e.*, May 23, 1915. Whilst it will be observed that the decree in question relates only to contracts entered into previous to the decree of mobilisation and has therefore in itself no effect on contracts made subsequent to that date, it is quite conceivable that the Italian Courts will apply the principles to contracts made subsequently and declare that the inability of the receivers to take delivery owing to congestion arising on account of the war constitutes *force majeure* and thus exempts the receivers from liability.

Building Risks.

The fact that the Government Air Raid Insurance scheme does not apply to vessels in harbour, or on the stocks, is not very satisfactory from the shipbuilders' point of view. The premium asked by Lloyd's and the companies for insurances on East Coast yards against war risks, is commensurate with the risk and runs into big figures where large values are concerned. This, taken in conjunction with the fact that on many vessels under construction work is at a standstill, means a much heavier expenditure on insurance than was expected, especially if the vessel was contracted for in time of peace. The usual practice of insuring a vessel for a period representing the normal time required for construction, with an additional premium for each month by which that time is exceeded, means that not only the war risk premium has to be paid, but the building risk premium reaches a larger figure than was anticipated, without any advance being made on the work in question. Rates on building risks have recently shown a tendency to decline. Presumably the decrease in new tonnage as shown in the figures published by Lloyd's Register has not been compensated by any diminution in the market available, and competition has become keener. The actual risk has probably decreased in most cases. A vessel on which no work is being done stands less chance of having a fire, and structural damage is less likely to occur than when work is in full swing. In the case of those vessels which it is necessary to complete without delay, and on which night work is being done, the risk is increased, though this is set off to an extent by the shorter period for which the risk exists.

White Sea A.P's.

Underwriters have recently had to pay for several losses which have occurred in the White Sea trade. The strandings of the steamers *Mascara*, *Jeanara*, and *Parkwood* come readily to mind, while the *Prestonian*, though wrecked on our own coast, was bound home from Archangel. This of course is nothing out of the ordinary, the increase in traffic has added to the number of casualties, but the ratio of accidents to the number of vessels engaged remains about the same. Another factor, however, enters into consideration with the approach of winter. Last season navigation

of the White Sea was continued until the early part of this year with the aid of ice-breakers, and but for the breakdown of the most powerful of these, the *Canada*, there is no saying for what time a channel might have been kept open. This year precautions will doubtless be taken against the recurrence of such a catastrophe. Foreseeing that some agreement must be arrived at as to the additional premia to be charged on vessels making winter voyages to the White Sea, underwriters have drawn up the following scale of rates for vessels sailing home, stipulating that the outward voyage shall commence during June or July :—

Steamers sailing before September 15	...	2 guineas	per cent.
,, ,, ,, September 30	...	3 ,,	,,
,, ,, ,, October 15	...	4 ,,	,,
,, ,, ,, October 20	...	6 ,,	,,
,, ,, ,, October 25	...	8 ,,	,,
,, ,, ,, November 1	...	10 ,,	,,
,, ,, after November 1	...	15 ,,	,,

These rates, of course, only apply to vessels insured with warranties which prohibit the trade in question. It is interesting to note that several steamers have been able to make the voyage without breaking their warranties, such a voyage never having been contemplated when the insurances were done. An instance of this are the Cunard steamers, two of which were icebound at Archangel last winter.

Engineers and Restricted Output.

In the course of a criticism of Mr. Lloyd George's recent speech in the House of Commons, Mr. J. T. Brownlie, the Chairman of the Executive Council of the Amalgamated Society of Engineers, makes a rather interesting point. The Minister of Munitions appealed, it will be remembered, to the leaders of Trade Unionism "to bring pressure to bear—such pressure as they can legitimately bring to bear—upon the men in their societies to work the arrangement made with the Government in a more liberal and in a more favourable and satisfactory sense." Mr. Brownlie points out that in the Munitions Act there is this clause: "Due notice shall be given to the workmen concerned wherever practicable of any changes of the working conditions which it is desired to introduce as the result of the establishment becoming a controlled establishment, and opportunity for local consultation with workmen or their representatives shall be given, if desired." So far as he knows, no notice of intention to change working conditions has been given; therefore, there can have been no breach of the agreement. We admit that on the surface the chairman of the A.S.E. Council appears to have made his point. He is bound to know, however, that the working conditions which Mr. Lloyd George would like to see changed are not written rules, but what a federated employer would probably call "irregular practices." There is no obligation on anybody under the Munitions Act to give notice of intention to suspend these practices. Even if there were, it would be impossible to bring about an improvement without the consent of the workmen. There is, however, a moral obligation on the men to suspend the practices, and it is because they are disregarding it that Mr. Lloyd George and a good many other people are disappointed with them. In our opinion, the Minister underestimated rather than over-estimated the effect of these restrictive practices when he said that it was to reduce the possible output by 25 per cent.

Clyde Engineers and War Work.

An action taken by the Clyde District Committee of the Amalgamated Society of Engineers, with a view to assuring the maximum output of urgently required material in connection with shipbuilding and the production of munitions, is worthy of all praise and deserves to be more widely known than it is. The problem with which employers and men are faced on the Clyde at present is that there are on the one hand urgent appeals for more workers to expedite certain important Government contracts, and on the other hand complaints are being made, and quite justifiably, by certain sections of the engineers that they have been working excessively almost since the beginning of the war and that they consequently have had no opportunity of recuperating. After a good deal of consideration the local committee of the Amalgamated Society of Engineers, with the approval of the Executive Committee, established a new labour bureau for the formation of "week-end war squads," and the transference of skilled artisans from one engineering shop to another. The object of the bureau is to regulate the available labour so that men who are suffering from overstrain may have opportunities for rest. It may be pointed out that in at least three of the principal shipyards on the river the engineers have been working for seven days a week for several months, and the officials of the Society desire to relieve these men by supplying others who have not been working so hard. The bureau was opened in Glasgow for the first time on Sunday, and the response by the members of the Amalgamated Society of Engineers was most gratifying. During the few hours the bureau was open 258 men gave in their names. The numbers enrolling on the subsequent days was equally encouraging, and it is believed that when the register is closed on Saturday the Society will have many more men than are required. It has been arranged that when the week-end squads are sent out each party will be accompanied by a member of the Clyde Committee, in order to supervise the conduct of the men and to be in a position to report to the Committee on the success of the arrangement.

Corrosion in Marine Boilers.

Elsewhere in this issue there will be found an article dealing with the subject of corrosion in marine boilers, forming an abstract of a paper on the subject which appears in the last issue of the "Transactions of the Institute of Marine Engineers." In dealing with the action of sea water and the effects produced thereby on the interior portions of marine boilers, the author advocates the addition of milk of lime, or, alternatively, soda, to the feed-water, for the purpose of neutralising the corrosive action which is set up. It is difficult to give any definite instructions as to the extreme limit to which it is wise to use either, as so much depends on the circumstances of each case, such as the density of the water, rate of working and the time which must elapse before the boilers are next cleaned. Experience points to the use of lime as being the more generally satisfactory on a voyage, whilst soda may be used in cases where the boiler water is acid through the density of the brine in the evaporator being excessive, and where no vegetable oil has been allowed to enter the boiler, or on entering port at the end of a voyage, or before blowing off. A small amount of salt water is bound to get into the boiler even under the most favourable conditions, and it is an excellent plan to continually use a small quantity of milk of lime to neutralise it. 1 lb. of lime dissolved in fresh water per 1,000 i.h.p. fed per day in a proper manner may suffice for this purpose.

Treating Feed-Water.

The method recommended for treating feed-water for marine boilers by means of lime or carbonate of soda provides that about 1 lb. of milk of lime should be added to 1 gall. of water, and that this mixture should be strained through wire gauze before use in order to get rid of any lumps or solid impurities. When starting with new boilers on a voyage for the first time 5 lb. of lime should be placed in the boilers for every 1,000 h.p. and 2 lb. of lime per day for every 1,000 h.p. should be passed through the hot-well as milk of lime for about six days, whilst for the remainder of the voyage 1 lb. per day per 1,000 i.h.p. At the end of the voyage the boilers should be examined to see if they have a thin coating of lime scale on their internal surfaces. If this is not the case and the water is of an unusual colour, the use of lime should be continued. The boiler water should be tested daily, and if found to contain a larger amount than 100 grains of chlorine per gallon the amount of lime should be increased. If the boiler water at any time be found acid

a solution of carbonate of soda should be added with the feed at the rate of a bucket of soda solution per hour until the water just turns brown paper blue, after which daily additions of soda or lime should suffice to keep the water in a safe alkaline state. In all cases on entering port soda crystals dissolved in fresh water should be added to the feed, as this will tend to soften any scale and render the boilers more easily cleaned.

DOMINIONS' TRADE.

ALTHOUGH the war has, naturally, arrested many important shipping plans in our Overseas Dominions, several interesting schemes are now being carried out, notably those that were in hand when hostilities began. This is particularly true of a number of dock works in Canada, South Africa and Australia; and, indeed, the disturbed European situation, which has for the time being ended developments in ship construction, will, doubtless, enable different harbour authorities to make their undertakings more up to date than would otherwise have been the case. In other words, the naval architect will not now be so far in advance of them. As regards the legislative aspect of the subject, the Merchant Shipping Acts of Canada have still to be revised, as intended by the Dominion Government, so as to bring them more into accordance with modern requirements, and there is very good reason to believe that this task will be faced during the next session of Parliament. All the drafting work has already, in fact, been done. Satisfactory progress is being made with the enlargement of the Welland Canal, connecting Lakes Erie and Ontario, which is necessary for the purpose of enabling larger boats to run to and from ports on the Great Lakes, and thus obviate transhipment at Montreal. The great dry dock at Quebec is well forward, but other schemes of the kind, which have been approved, will not be proceeded with for the present. Then, again, the Hudson Bay Railway is nearing completion, although in well-informed quarters doubts are still expressed about the practicability of the route. Australian questions too, have been receiving a good deal of attention, the recent conference of State Premiers having resulted in agreement on many of them, but nothing further appears to have been done with the Navigation Act, which is still in a state of suspended animation. The South African maritime outlook is also quite good, and in this connection it is interesting to learn that all the companies whose vessels run to and from the Cape have decided to call at Swakopmund and Luderitz Bay, if cargo offers in sufficient quantities. In this necessarily brief survey of the situation reference has not been possible to shipping activities in other parts of the Empire. Progress is, however, being made all round, with the result that the future may be awaited with great confidence.

CART NAVIGATION DEADLOCK.

THE situation which has arisen in connection with the resuscitation of the Cart Navigation Trust can only be described as a deadlock, and it is difficult at present to see how a way out of the *impasse* is to be found. About six weeks ago the Court of Session decreed that the Cart Navigation, which has been managed for a number of years by a judicial factor for the behoof of bondholders, should again be placed under the control of Trustees elected by various interests, including the Corporation of Paisley and the shipbuilders who carry on business on the banks of the River Cart. In relieving the judicial factor of his duties, the presiding Judge of the Court of Session expressed the opinion that the Cart Navigation undertaking, though waterlogged, ought not to be left derelict, and in order to avoid that result his lordship said that no better means could be devised than to revive the Trust, for, after all, that body had only been temporarily suspended in its administration by the judicial factor's appointment. Steps were duly taken to carry out this decision of the Supreme Court in Scotland, and representatives to the Trust were elected by the shipbuilders and others. Six representatives were also nominated as members of the Trust by the Paisley Corporation, but at a meeting of the latter body held last week these six gentlemen intimated that they could not see their way to act as Cart Trustees. They state that they have come to this decision after careful consideration of the whole matter. The condition of the plant and of the river generally is not very good, and in view of the fact that over an average series of years the income of the Trust has not met the expenditure, and, as since the outbreak of the war the revenue has been further greatly reduced owing to the falling-off in traffic, they think that in these circumstances it is hopeless to carry on the navigation. In view of this attitude it is interesting to recall the statement made by one of the Judges on this point when the case was before the Court of Session. He said he did not think it was too much to say that the attitude of the Paisley Corporation towards this concern had not recently been satisfactory, and that the Court considered that it was the duty of the Paisley Corporation to see that the Trust was properly constituted and not tell the Court that, although they might appoint and elect gentlemen from their own body to sit upon the Trust, these gentlemen would not act. These gentlemen, he said, were expected to act, and probably the Court might take steps to see that they did act. The situation is perhaps unique in the history of port authorities in this country.

UNITED STATES SHIPBUILDING.

A GREAT deal has been heard lately of a boom in shipbuilding in the United States, although a point which is not brought out but which is an important one is that the shipbuilding activity over there has only succeeded and not preceded shipbuilding congestion in other neutral countries. One hears little of the building activities of the Scandinavian countries or of Holland in spite of the fact that most of the yards are booked up with orders which will keep them working at full pressure for the next two and, in some cases, three years. The dependence of these yards upon the belligerent nations for some of the shipbuilding material is, however, causing embarrassment, and it appears that it is only because other neutral yards are full up with orders that some owners have looked to the States for vessels which in present conditions are relatively only a little dearer when the questions of cost and delivery are taken into account. Most of the new construction there, or at any rate the earlier orders, were for types peculiar to the services round and about the Atlantic and Pacific seaboards, and it is only of late that one hears of oil tankers which might have been put into the hands of British yards being constructed on the other side of the Atlantic. Some of the orders which have been announced require more verification than is obtainable at present and we have more than a suspicion that one order by recurring at intervals in the Press presents a similitude of extensive contracting. This is, indeed, a common feature with announcements of this character, and a point which some contemporaries pay little regard to. It is our experience that a great many papers repeat the announcement of an order published by themselves some months previously and that a report of this character revived thus goes the rounds of the Press as though it were fresh. It is easy in this way to credit a shipyard with more orders than can be accommodated for years.

Coming now to figures recently published by the Washington authorities, it appears that on July 1 there were under construction at American shipyards 65 steel mercantile vessels of 298,426 tons gross. Of these 60, of 288,701 tons gross, are under construction on the seaboard, of which 21 of 154,056 tons are bulk oil carriers, 6 of 25,475 tons are colliers and 5 of 17,000 tons are passenger steamers, the remainder being cargo-boats. There is nothing in these figures to indicate anything in the nature of a boom, especially considering the fact that the tonnage now building is inferior to that under construction at the same period in 1907 when 65 steel

mercantile vessels of 298,426 tons gross were on the ways. At that time not less than 63 steel vessels of 273,865 tons were building at coast yards, so that the much heralded boom resolves itself into an increase in shipbuilding of 14,836 tons, probably due to increased activity on the Pacific coast. The above figures show that only a period of mild prosperity is facing the industry and that many more orders for future delivery will have to be secured before the shipbuilding industry can be put on anything approaching a stable basis.

THE CAUSES AND PREVENTION OF CORROSION.

AN interesting paper entitled "Notes on Corrosion: Causes and Preventive Measures" appears in the latest issue of the "Transactions of the Institute of Marine Engineers." It is pointed out therein that the principal causes of corrosion in marine boilers are four in number, viz.:—(1) sea water; (2) animal and vegetable oils; (3) air; and (4) galvanic action. The author deals with the action, and means for nullifying the same, in each case, and in conformity with the order given deals first of all with sea water.

This varies in composition to a very considerable extent, but the following analysis may be taken as representing about the mean average quantities of the various constituents:—

Carbonate of lime	9·20	grains per gallon.
Sulphate of lime	112·45	,, ,,
Sulphate of magnesium	160·26	,, ,,
Chloride of magnesium	261·91	,, ,,
Chloride of sodium	1,870·86	,, ,,
	2,414·65	,, ,,

Under certain conditions sea water in immediate contact with heated iron or steel surfaces becomes acid by the conversion of the chloride of magnesium into hydrochloric acid and magnesia. The hydrochloric acid dissolves a certain quantity of iron from the boiler surfaces, forming chloride of iron, and as soon as the latter is formed it is decomposed by the magnesia already liberated, precipitating oxide of iron and re-forming chloride of magnesium. In other words the acid formed in the boiler is merely developed locally, whilst the water is in contact with the hot tubes and is immediately afterwards destroyed by re-uniting with the magnesia. Hence iron is never found in solution in the boiler water, and the water which is being evaporated in the boiler itself would (if no acid were introduced with the feed-water) never be found acid when tested. The oxide of iron deposited is ferrous oxide and is black, and remains so unless air is allowed to get into the boiler, when it becomes ferric oxide and changes in colour from black to brown or red.

If corrosion is to be prevented sea water must be kept out of the boilers, and this can only be attained by making and keeping the condensers tight. To deliberately instal expensive and well-constructed boilers, and as deliberately to use in connection therewith condensers known to be subject to leakage, and so constructed as to make quick and efficient repair extremely difficult, is commercially unsound.

Every ton of sea water allowed to enter the boiler means the introduction of:—

Carbonate of lime	·285 lb.
Sulphate of lime	3·478 ,,
Sulphate of magnesium	4·957 ,,
Chloride of magnesium	8·101 ,,
Chloride of sodium	57·871 ,,
	74·692 lb., say, 75 lb., solids.

Evaporators are essential for making up the loss of water due to leakage of glands and joints, but they must be blown down before the brine becomes too concentrated; otherwise the chloride of magnesium will be decomposed and give off hydrochloric acid, which will pass over into the boilers with the distilled water, and thus render the fresh make-up feed-water acid. The action of the acid formed in this way differs from that formed in the boiler by the decomposition of sea water, inasmuch as it does not immediately afterwards become destroyed by reuniting with the magnesia, but is carried in with the fresh make-up feed, and is held in solution. It is thus in a position to attack all parts not protected by scale or otherwise. This is a point which demands careful attention. On no account should the brine be allowed to get above $\frac{5}{32}$, and when this point is reached the evaporator should be blown down and refilled with fresh sea water.

It is undesirable to start boilers with dock water. Dock water is a tidal water, and always contains a certain percentage of sea water and other impurities.

The following example is from actual practice, and occurred in the boilers of a steamer trading between this country and the Mediterranean:—

	Boiler water on starting. Grains per gallon.	Boiler water at end of voyage after 15 days' steaming. Grains per gallon.
Magnesia	3·32	·92
Sulphate of lime	72·42	28·22
Sulphate of magnesium	39·84	332·82
Chloride of magnesium	99·62	497·40
Chloride of sodium	695·52	4,710·91
Total	910·72	5,570·25

The boilers on starting were filled up with dock water, which contained 30 per cent. of sea water, and at the end of the voyage, which was of 15 days' duration, although provided with evaporators, the total solids had risen to 5,570 grains—that is, the density had risen to 12·7 oz. or $\frac{2·54}{32}$. Assuming that each of her two boilers held 2,000 gall., this means a total leakage of sea water into the boilers of 8,120 gall., thus introducing:—

Scale forming sulphate of lime	=	131 lb.
Sulphate of magnesium ...	=	186 ,,
Chloride of magnesium ...	=	304 ,,
Chloride of sodium	=	2,170 ,,

These quantities are such that in practice ordinary remedies cannot neutralise their detrimental effect.

It is the system that is at fault; condensers should be made tight, and sea water kept out of marine boilers if they are to be kept free from corrosion. Failing this, all types of marine boilers will always be liable to corrosion. The addition of milk of lime, or alternatively soda, will neutralise the corrosive effects of sea water.

The other points raised by the author will be dealt with in a succeeding article on the subject.

PUBLICATIONS RECEIVED.

[*A short notice of any publication does not necessarily preclude the subsequent appearance of a longer review.*]

Manual of Electrical Undertakings. Vol. XIX. By Emile Garcke. 1915-16. London Electrical Press, Ltd., 13-16, Fisher Street, Southampton Row, W.C. 9 in. × 6 in. × 3 in. pp. 2,000. Cloth, 21s. net.

This, the 19th volume of "Garcke," contains statistical and general information regarding 3,000 electrical undertakings, including the names of officials, as against 200 in the first issue; the aggregate capital issued (excluding Government telegraphs) rose, in the same period, from over 61 to more than 470 million pounds sterling. This book is divided into seven sections, which cover the whole ground. In the usual article on "Progress of the Year," the effect of the war which, up to now, has been singularly slight, is chronicled; other cognate subjects are dealt with in 17 special articles. The usual 48 maps are bound in the volume and the large map of lighting, power and traction undertakings in the United Kingdom is issued as a separate supplement. The directory of officials contains 20,000 names and addresses, and that of the buyers has been given in a classified form. The data are all derived from official sources and have been verified up to the latest date possible.

LETTERS TO THE EDITOR.

The Editor does not hold himself responsible for the opinions of Correspondents.

DEADWEIGHT DISPLACEMENT RATIO.

Hebburn Shipbuilding Yard,
Hebburn-on-Tyne,
August 9.

To the Editor of Shipbuilding and Shipping Record.

With reference to Mr. Simpson's remarks regarding the ratio of deadweight to displacement of tramp steamers, while it is of course very desirable that as large a deadweight as possible should be carried on a given displacement consistent with other requirements, such ratios should be used with great care, as they are misleading unless accompanied with a large amount of further information regarding the vessel.

The ratio in question is very considerably affected by the form and speed of the ship (involving power and machinery weights), draught, general class or trade (involving cargo capacity, cargo handling appliances, wood decks, fittings, cold stores, &c.); also by machinery extras introduced to reduce fuel consumption, such as quadruple expansion machinery, superheat, &c.

I am of opinion that this ratio should only be used as a rough guide inside one's own business in connection with the plainest cargo vessels with the full particulars of which one is familiar. The larger use of it outside would lead owners and others to compare proposals by this ratio without regard to anything else. It is, in fact, more misleading than the ratio "cost per ton deadweight," for the use of which by shipowners there is some justification, if little by shipbuilders.

The ratio mentioned by Mr. Simpson of 1·355 is very low, but size, speed and draught are factors which really fix it as well as the weight of the hull, and I feel sure there are British-built vessels with displacement : deadweight co-efficient which would compare favourably with this ratio.

HERBERT ROWELL.

Newcastle-on-Tyne,
August 7.

To the Editor of Shipbuilding and Shipping Record.

In your issue of August 5, I notice a letter by Mr. G. Simpson inviting readers to state the lowest ratios of displacement to deadweight attained by them. Though I am not in a position to comply with Mr. Simpson's request in the manner contemplated, there are some points in connection with the current endeavours to increase carrying power to which I should like to call attention. Such endeavours should be preceded by investigations into the stresses to be borne by a ship at sea and into the efficiency of the rivet-connected plates and bars of which her structure is composed. The state of our knowledge under both these heads is very imperfect. A German author of repute not long since endeavoured to show that the longitudinal strength of ships built on a system of longitudinal framing was about one-third greater than that of one built on the transverse system and, indeed, that the stresses taken by the unsupported parts of the plating were almost imaginary. A grain or two of salt are no doubt necessary here, but attention may, in passing, be drawn to the Isherwood longitudinally framed vessels which have so far given a very good account of themselves. In the present state of our knowledge it looks hopeless to try to estimate the stresses that have to be borne by a vessel at sea, but if we make the attempt we shall certainly learn a good deal. The tanker *Oklahoma* collapsed under conditions sufficiently well known to admit of a rough estimate of the moments exerted being made. Mr. Wm. John once made an estimate of the kind on a ship called the *Mary*, which also broke in two. Doubtless there are other cases of a similar kind, and the investigator would find sufficient material to work upon. Until the questions of bending moments to be withstood and available moment of resistance possessed by the structure are resolutely approached, gains in the ratio of deadweight to displacement under this head must remain doubtful, and their amounts cannot be very great. The other means of bettering the ratio—that of special design—is a very intangible one. In order to make comparisons between different designs, it is necessary to assume normal conditions—say, those of a three-island vessel with average proportions of $\sqrt{\text{length}}$ to draught, sheer, speed, depth to top of erections, &c., and a given fullness of ends. All these have their proper relations to one another, that have gradually been evolved from experience, but which have good "reasons of existence" behind them. To alter them much would be to take unwarrantable liberties with the laws of nature. Too little depth or too low a sheer would produce a wet ship. Too shallow a ballast draught would make the ship unmanageable in a high-running sea. Too bluff an entrance or run is bad both for speed and for steering qualities, and so on. The ratio of deadweight to displacement will remain fairly constant and no legitimate manipulations of design will alter it very much. What the designer can do is to arrange his vessel so that the longitudinal disposition of her weights is as favourable to strength as possible, that the longitudinal bending moments are not excessive either in the loaded or in the ballast condition, and that the longitudinal moments of inertia of the displacements and of the weights of the after and fore bodies about the centre of buoyancy are as much alike as possible. Were such rules of design universally understood and followed, a case might be made out for a certain general reduction of weight and with it, of course, would come increased carrying power per ton of displacement.

ARTHUR R. LIDDELL.

To the Editor of Shipbuilding and Shipping Record.

Mr. Simpson's letter on the above subject, which appeared in last week's issue, solicited information from those engaged in the design and construction of cargo ships as to the maximum ratio of deadweight to displacement which had been achieved within their knowledge. In the letter referred to the writer states that "in some of the instances which had come under his personal observation of British vessels the lowest deadweight ratio to displacement has been 1·375." I take it that this means that the total deadweight was 72·6 per cent. of the displacement. If Mr. Simpson refers to your issue of February 11 of the present year, he will find in a short article dealing with load efficiency some figures which show that higher figures have been attained. Mr. Maxwell Ballard claims that vessels built on the arch principle of ship construction have carried a deadweight equal to 75 per cent. of the load displacement, and in a paper read before the Institution of Naval Architects in 1911 he mentions the case of a vessel 338 ft. in length, 47 ft. 3 in. in beam, carrying 6,237 tons of deadweight (including bunkers) at a draught of 22 ft. 6 in. The displacement stated was 8,188 tons, which gives a ratio of deadweight to displacement of ·762. From comparison of the ratios of deadweight to displacement attained by a large number of ships it appears that the large majority average about 70 per cent. When extra care has been taken in the design this has been increased to 72 or 73 per cent., and the cases cited by Mr. Simpson of the *Atlantic* and the *Pacific* show that considerable skill has been exercised in their design and construction. When special types of construction are employed, such as in the Doxford turret, the Ayre Ballard, or the Isherwood systems, as high as 76 per cent. may be attained. It would be of considerable interest and value to naval architects if those of your readers who are in the thick of this type of work would give corroboration as to the attaining of the high load efficiencies mentioned above, and whether such have been exceeded.

NAVAL ARCHITECT.

PORT OF LONDON AUTHORITY.

Sixth Annual Report.

The sixth annual report of the Port of London Authority, covering the year ended March 31 last, has now been issued. It shows that the net register and deck cargo tonnage of shipping which entered and left the Port of London and paid river tonnage dues during the 12 months ended March 31, 1915 and 1914 respectively, was as follows :—

		1915.		1914.		Percentage decrease. 1915.
Foreign	Inwards	11,686,967		12,916,378		9·51
	Outwards	6,832,569		8,131,660		15·97
			18,519,536		21,048,038	12·01
Coastwise	Inwards	5,9 2,740		6,925,198		14·76
	Outwards	2,420,454		2,843,145		14·87
			8,323,194		9,768,343	14·79
			26,842,730		30,816,381	12·89

The decrease was therefore 3,973,651 tons, of which 2,528,502 tons were in the foreign and 1,445,149 tons in the coastwise trades. But for the war it is probable that the figures for 1915 would have again exceeded previous totals, as the first four months, to the end of July, 1914, showed an increase on the corresponding period of the preceding record year.

The tonnage of shipping included in the above which used the wet docks amounted to 61·8 per cent. of the total, a larger proportion than usual owing to the relatively smaller disturbance of shipping using the docks, viz. :—

		1915.		1914.		Percentage decrease. 1915.
Foreign	Inwards	8,871,448		9,749,555		9·00
	Outwards	5,449,148		6,355,571		14·26
			14,320,596		16,105,126	11·08
Coastwise	Inwards	1,425,865		1,547,151		7·84
	Outwards	850,135		865,313		1·75
			2,276,000		2,412,464	5·65
			16,596,596		18,517,590	10·37

The tonnage of shipping liable to dock dues which entered the wet docks was 10,811,734 tons, as compared with 11,226,645 tons for the year ended March 31, 1914, a decrease of 414,911 tons, or 3·70 per cent. The whole of this decrease occurred during the period covered by the war. The shipping entering the dry docks of the Authority during the 12 months was 320,054 tons, or 11·85 per cent., more than that of the previous year.

During the year under review the Authority landed or received 2,388,028 tons of import goods for warehousing or for immediate delivery, an increase of 169,762 tons, or 7·65 per cent., as compared with the tonnage dealt with during the previous 12 months. This is a higher total than any hitherto recorded, and is accounted for by exceptionally heavy landings for warehousing in consequence of war conditions.

War has affected the business of the Authority in many directions. As already shown it has caused a great fall in the aggregate tonnage of shipping entering and leaving the port. The import goods dealt with at the Authority's docks increased, however, by 169,762 tons in the aggregate, or 7·65 per cent., notwithstanding the interference with the trade of the Baltic and North European ports. Export goods suffered a decrease of 72,791 tons, or 8·83 per cent.

Shortly after the declaration of war, the Government departments requisitioned for transport service a large number of ships regularly engaged in the mercantile traffic and made extensive demands for dock accommodation for the same purpose. The aggregate tonnage of these vessels which used the docks amounted to 670,000 tons net register.

The port of Southampton was taken over by the Government and devoted exclusively to the transport of troops and munitions, its commercial traffic being entirely suspended. London accommodated a part of the displaced traffic and, in addition, many vessels destined for other ports in the United Kingdom were for various reasons also diverted to London. The approximate tonnage of diverted vessels was as follows :—From Continental and coastwise ports, to discharge, 525,000 tons ; for foreign ports, to load, 136,000 tons.

Both by land and by water a serious diminution of transport facilities soon became apparent in consequence of Government demands, with the inevitable result that congestion ensued. Warehousing accommodation everywhere was filled. As an illustration, it may be mentioned that the Government brought to the port in a few weeks 100,000 tons of sugar, which the Authority was called upon to accommodate. The Authority, at an expenditure of £91,000 to date, dealt with the abnormal conditions by undertaking extensive and rapid expansion of storage accommodation, representing in area 366,500 sq. ft., at the West India, Millwall, Surrey Commercial, and Tilbury Docks.

Finance.

The capital expenditure during the year ended March 31, 1915, amounted to £966,384, distributed as follows :—

	£	£
Schemes for improvement and extension of dock accommodation, &c.		
Purchase of land, &c....	22,448	
Works	680,787	
		703,235
New head offices :—		
Purchase of land, &c....	17,399	
Works	38,885	
		56,284
Sundry new works, plant, &c., for improving the accommodation and facilities of the port...		108,193
Dredging :—		
Additional dredging plant	911	
Dredging for the permanent deepening and widening of the channel of the River Thames	30,749	
		31,660
Discount and expenses of the creation and issue (June 17, 1914) of £1,000,000 4 per cent. Inscribed port stock		67,012
		£966,384

The following is a summary of the year's working :—

	Docks & River.	Warehouses.	Total.
	£	£	£
Total revenue	2,387,565	1,351,230	3,738,795
Total expenditure	1,357,457	1,021,522	2,378,979
Balance of revenue	1,030,108	329,708	1,359,816
Deduct –			
Charges for interest on port stock, sinking funds, income-tax, &c., less interest, rents, &c., receivable			1,043,477
Surplus revenue			316,339
Add –			
Balance of net revenue account, March 31, 1914			91,904
Balance available			408,243
Deduct—			
Special repairs—	£		
Expended during year to date	30,159		
Provision to meet expenditure already sanctioned and in progress	115,276		
		145,435	
Provisional reserve towards Authority's contemplated pension scheme		75,000	
			220,435
Balance of revenue carried forward			£187,808

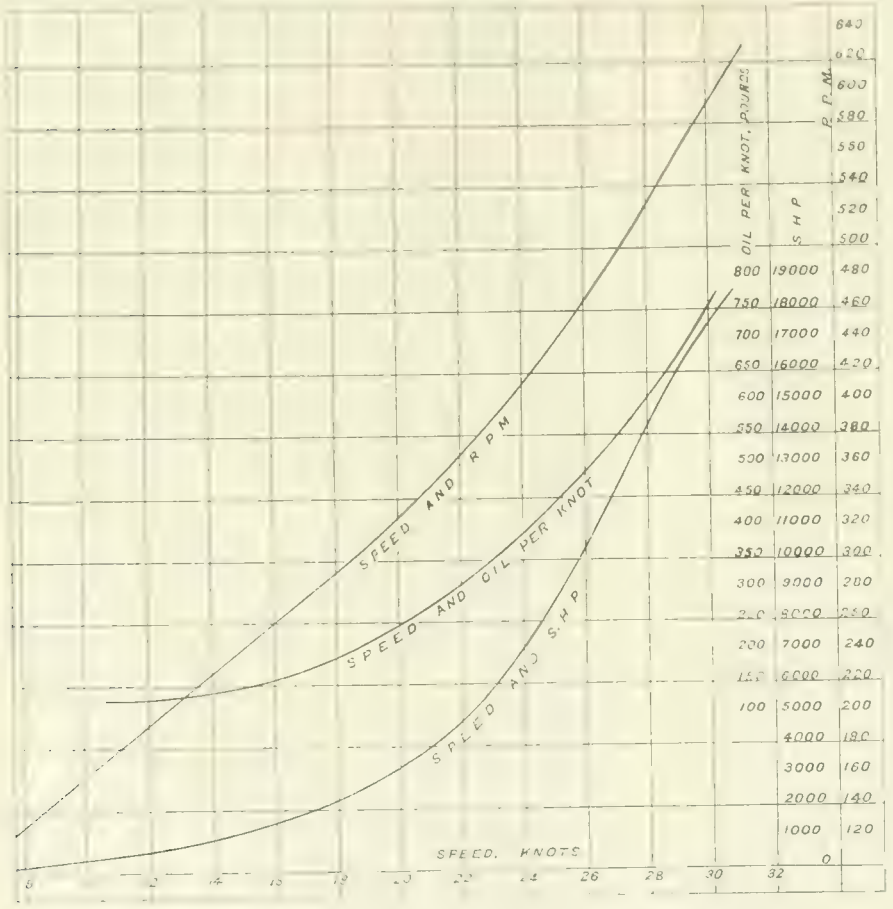
Shortly after the inception of the Authority a preliminary survey was made of the condition of the undertaking, and, upon this examination, it was provisionally estimated that an expenditure of £729,044 would be necessary to bring the undertaking to a satisfactory state of efficiency. To March 31, 1914, £406,918 had been expended on account of this programme, the whole of which has been liquidated out of revenue. In May, 1914, after a complete and exhaustive survey the chief engineer reported that, in addition to the £406,918 already expended to March 31, 1914, further expenditure estimated to amount to £434,338 was necessary to complete the programme as revised. The Authority sanctioned during the year the commencement of works involving expenditure when completed estimated at £145,435, but owing to the war progress had been retarded. At March 31, 1915, £30,159 had been expended on account of this grant, and provision has been made out of net revenue, for the balance unexpended, viz., £115,276.

The amount standing to the credit of the general reserve fund at March 31, 1915, was £401,624. The fund has been augmented during the year by interest on investments amounting to £12,726.

The investments held on account of the fund in Government corporation and railway stocks, valued at fixed minimum or mean market prices at March 31, 1915, amounted to £376,924, leaving a balance of £24,700 to be invested.

TRIALS OF THE T.B.D. "NICHOLSON."

Lieutenant W. F. Cochrane, U.S.N., has contributed to the American Society of Naval Engineers particulars concerning the trials of the United States torpedo-boat destroyer *Nicholson*, and the information is contained in the May issue of the Journal of that Society. The author, in describing the *Nicholson*, states that it is one of six destroyers authorised by an Act of Congress, approved August 22, 1912, and the contract for building three of the boats, including the *Nicholson*, was awarded to the Wm. Cramp & Sons, Ship & Engine Building Company, Philadelphia, Pa., in December of 1912. The time allowed for completion was 23 months for the *O'Brien*, 23½ months for the *Nicholson*, and 24 months for the *Winslow*.



Standardisation Trial Results of T.B.D. "Nicholson."

The designed speed was 29 knots, at about 1,050 tons displacement.

The contract price for each vessel was £168,400, of which £100,400 was allotted for machinery.

The principal dimensions of the hull are :—

Length, b.p.	300 ft	Area, l.w.l. plane	6,050 sq. ft.
,, o.a. ...	314 ft. 3 in.	,, wetted surface ...	9,760 sq. ft.
Breadth, extreme, over plating	30 ft. 7 in.	Displacement per inch at l.w.l.	14·39.
Breadth, over guards ...	31 ft. 1 in.	Coefficient of fineness, block	0·426.
,, moulded ...	30 ft. 6 in.	Coefficient of fineness, midship section	0·684.
,, on l.w.l., moulded	30 ft. 4 in.	Coefficient of fineness, l.w.l.	0·660.
Draught, mean	9 ft. 6 in.		
Displacement	1,050 tons.		
Area, immersed midship section	196·6 sq. ft.		

The general arrangement of the vessel is the same as the *Aylwin* class which were described in the Journal of the American Society of Naval Engineers, February, 1914, except that the propellers are located farther forward, eliminating one pair of struts and shortening the shafting.

The machinery is similar to that of the *Aylwin* class. The turbines are designed to develop 17,000 s.h.p. at about 600 r.p.m. There are two Cramp Zoelly turbines arranged on two shafts with a compound, reciprocating, cruising engine on the forward end of each shaft. Between the cruising engine and the turbine there is a hydraulically-operated friction clutch designed by Mr. J. F. Metten, Chief Engineer to the builders. An improvement in detail over the *Aylwin* type turbine consists in an improved type of nozzle rings. In the *Aylwin* turbine the nozzles were formed of thin steel guide blades in the annular openings in the cast-iron nozzle rings. The guide blades were set in the mould when the nozzle rings were cast. In many cases it was found that the guide-blade angles were not correct, and to remedy this trouble the *Nicholson's* nozzle rings are made of wrought steel with guide blades of the same material as the regular turbine blades. The blades are set in the brass container rings made in sections, and these containers are set in the annular openings of the nozzle rings and are secured by riveting over their edges into recesses provided in the nozzle rings.

The propellers, 7 ft. 8½ in. in diam., are of manganese bronze, three blades each, with a pitch of 6 ft. 8 in. and a pitch ÷ diameter ratio of ·865. The projected area is 28·21 sq. ft., the helicoidal area 31·50 sq. ft., and disc area 46·67 sq. ft.

There are four White Forster boilers fitted for oil-burning with a working pressure of 260 lb. There are 11 burners in each, with a total heating surface of 21,600 sq. ft. There are four forced-draught Keith fans driven by Terry steam turbines. The contractors guaranteed that the fuel oil consumption per knot run for all purposes, including that necessary for all auxiliaries in use on the trials, would not exceed 692·25 lb. at guaranteed maximum speed, 444·6 lb. at 24 knots, 213 lb. at 15½ knots, and 170 lb. at 12 knots.

The standardisation trial was conducted under favourable weather conditions on the measured mile at Lewes, Delaware. Twenty-eight runs were made over the course at various speeds, and from the data obtained the curves in the accompanying diagram were plotted. From these curves the following revolutions per minute of the propellers were found to be necessary for the various speeds :—

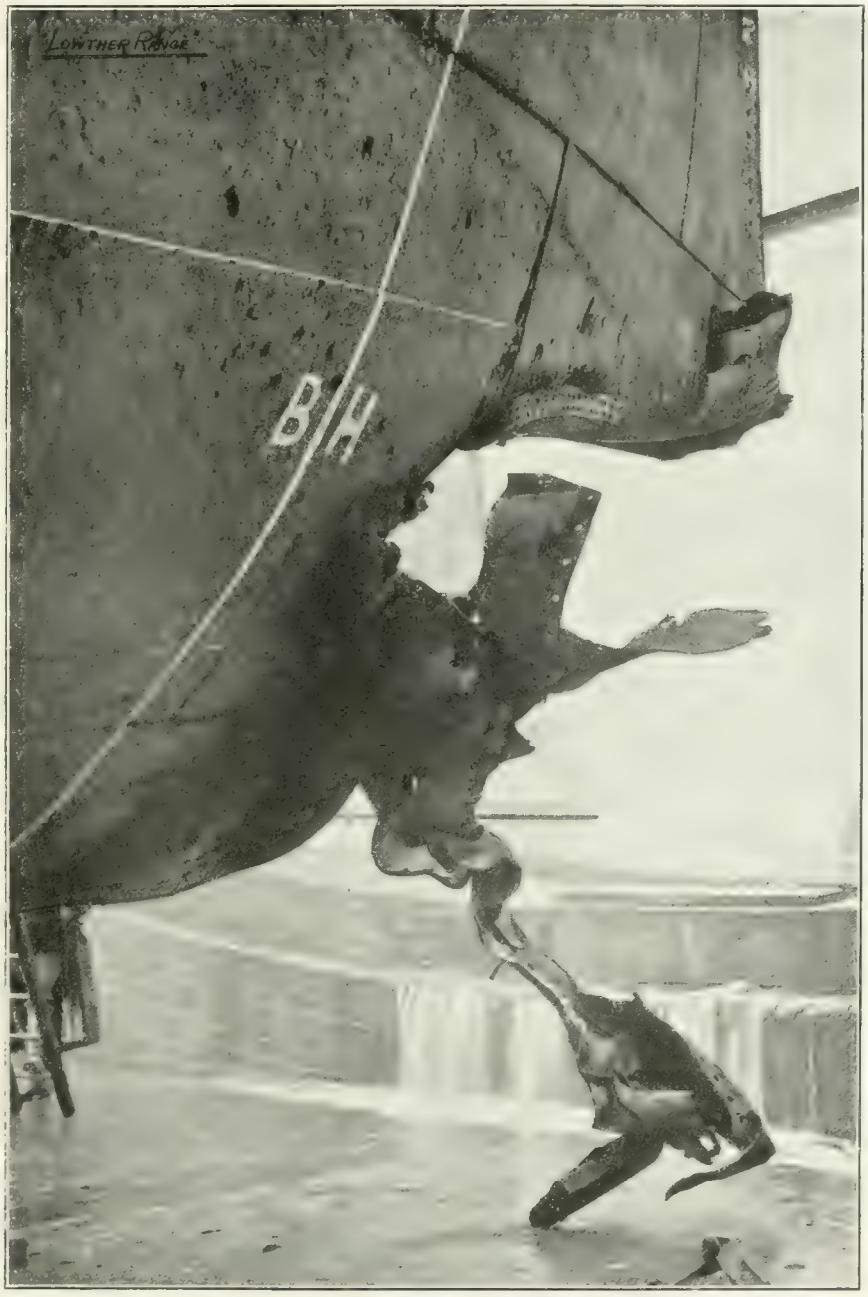
12 knots	195·00	24 knots ...	415·40
15½ ,, ...	252·00	29 ,, ...	563·40

U.S.S. "Nicholson" Progressive Trial Results.

	4 hour full power. 3 24/15	4 hour 24 knt. 3 24 15	4 hour 15½ knt. 3 25 15	4 hour 12 knt. 3 25 15	2 hour 15½ knt. 3 24 15
Displacement	1,045	1,047·5	1,044·5	1,051·5	1,046·9
Boilers in use	4	4	2	2	2
Heating surface	21,600	21,600	10,800	10,800	10,800
Speed, in knots	29·084	24·081	15·625	12·13	15·621
R.p.m., starboard ..	556·40	417·35	253·91	197·15	253·85
,, port	565·79	417·06	253·80	196·98	253·97
I.H.P., cruising engines	15,906	—	723	375	—
Pressures :—					
Main steam (G) ...	250·8	248·2	251·9	250·6	222·8
Main turbines :—					
Full speed (abs) { S.	201·3	70·4	17·4	10·0	22·0
Full speed (abs) { P.	215·4	75·0	15·0	10·0	23·2
Cruising (abs.) { S.	149·9	195·5	37·0	18·0	67·6
Cruising (abs.) { P.	164·8	209·0	38·4	19·4	72·9
Vacuum, starboard ...	26·6	28·3	28·3	28·5	27·6
,, port	27·8	28·8	29·0	29·0	28·2
Temperatures :—					
Air	49·5	47·4	48·6	44·1	46·4
Engine room	80·0	71·3	86·3	79·1	70·1
Stokehold	71·7	71·7	85·0	84·7	77·1
Air pressure	0·2	2·5	1·3	1·0	1·9
Water consumption, lb. per S.H.P., M.E.	16·224	18·632	22·06	24·22	33·94
Fuel oil, per knot run ...	687·3	397·74	155·95	131·86	222·42
Water evap. per lb. oil ...	12·9	14·12	14·7	13·12	14·69

COLLISION DAMAGE TO THE "LOWTHER RANGE."

We reproduce below a photograph showing the damage sustained by the steamer *Lowther Range* which just before midnight of Saturday, July 17, 1915, was in collision with and sunk the steamer *Polish Prince*. The *Lowther Range*, which is a steel screw steamer of 3,926 gross register and 2,465 net register, built by Messrs. Furness, Withy & Co., Ltd., and launched at West Hartlepool in June, 1906, is owned by the Neptune Steam Navigation Company, Ltd., Sunderland, managers Messrs. Furness, Withy & Co., Ltd. The *Polish Prince*, which was formerly a German-owned vessel and taken as a prize at the commencement of war, was owned by the Prince Line, Ltd., Newcastle. The *Lowther Range* was at the time of the collision proceeding light to Ireland from Manchester and the *Polish Prince* was bound to Queenstown from Cuba with a cargo of about 4,700 tons of sugar. Just before midnight on July 17 in a rough sea the collision occurred about 200 miles west of the Fastnet Lightship, as a result of which the *Polish Prince* was sunk. The officers and crew of the sunken vessel (27) were got on board the *Lowther Range*, when it was found that a fireman was missing. Several men at once returned to the *Polish Prince* but were unable to trace the fireman and reluctantly were forced to leave the sinking steamer as she was rapidly settling down. Though the *Lowther Range* had a very large hole in her bows on the water-line, she remained afloat and succeeded in reaching Barry where she was placed in the hands of Messrs. C. H. Bailey & Co. for repairs and docked in the Commercial Dry Dock.



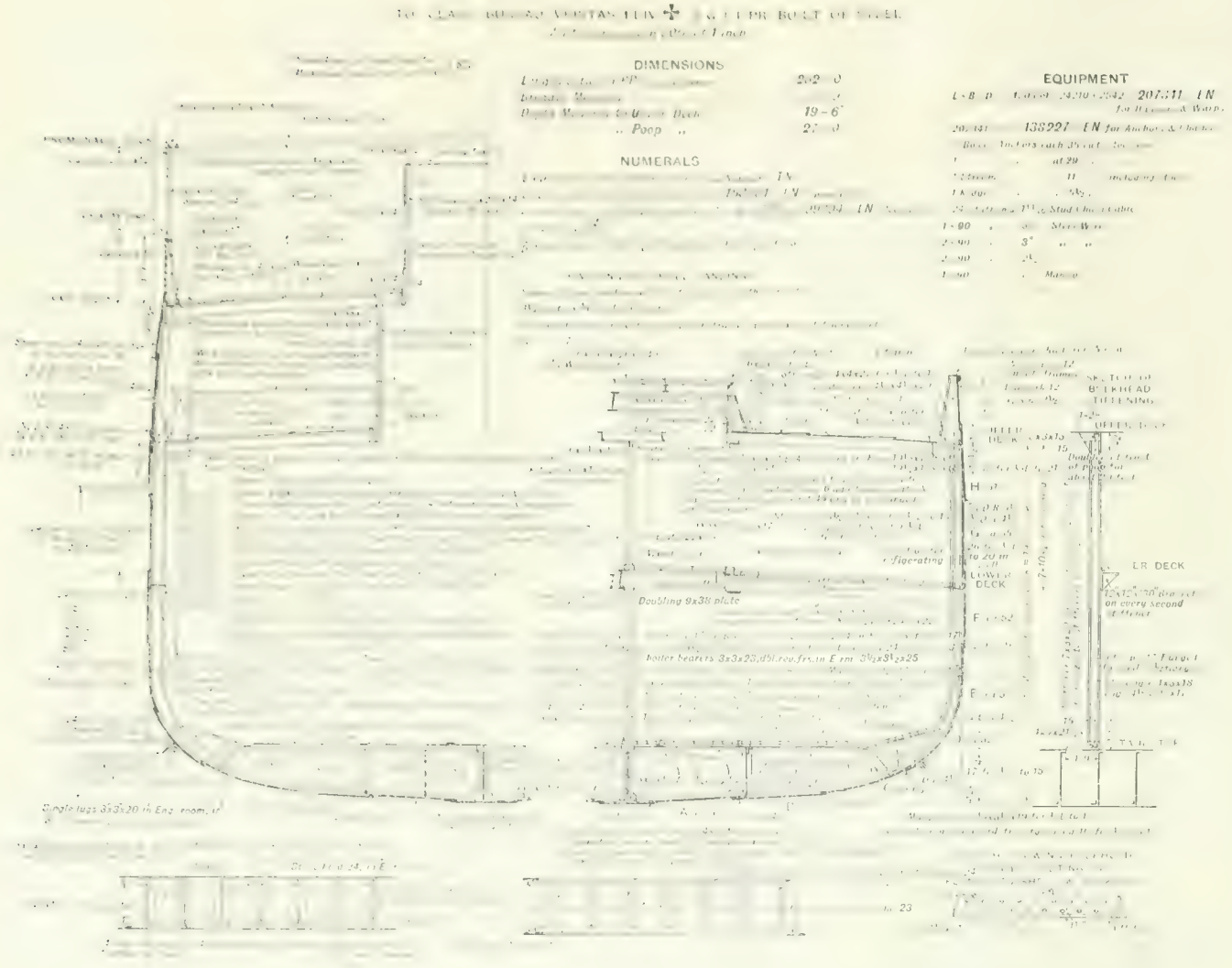
Starboard Bow of the "Lowther Range." Repairers: C. H. Bailey & Co., Barry.

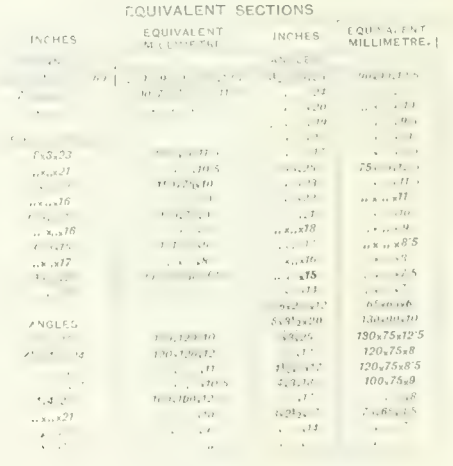
Her stem, as will be seen from our illustration, was badly buckled and the bottom half of her bow was crushed back almost to the collision bulkhead. Somewhere about 25 plates, a new stem bar, and a number of frames, beams, and stringers will have to be replaced before the vessel is ready for sea again.

THE MURRAY RIVER SCHEME.

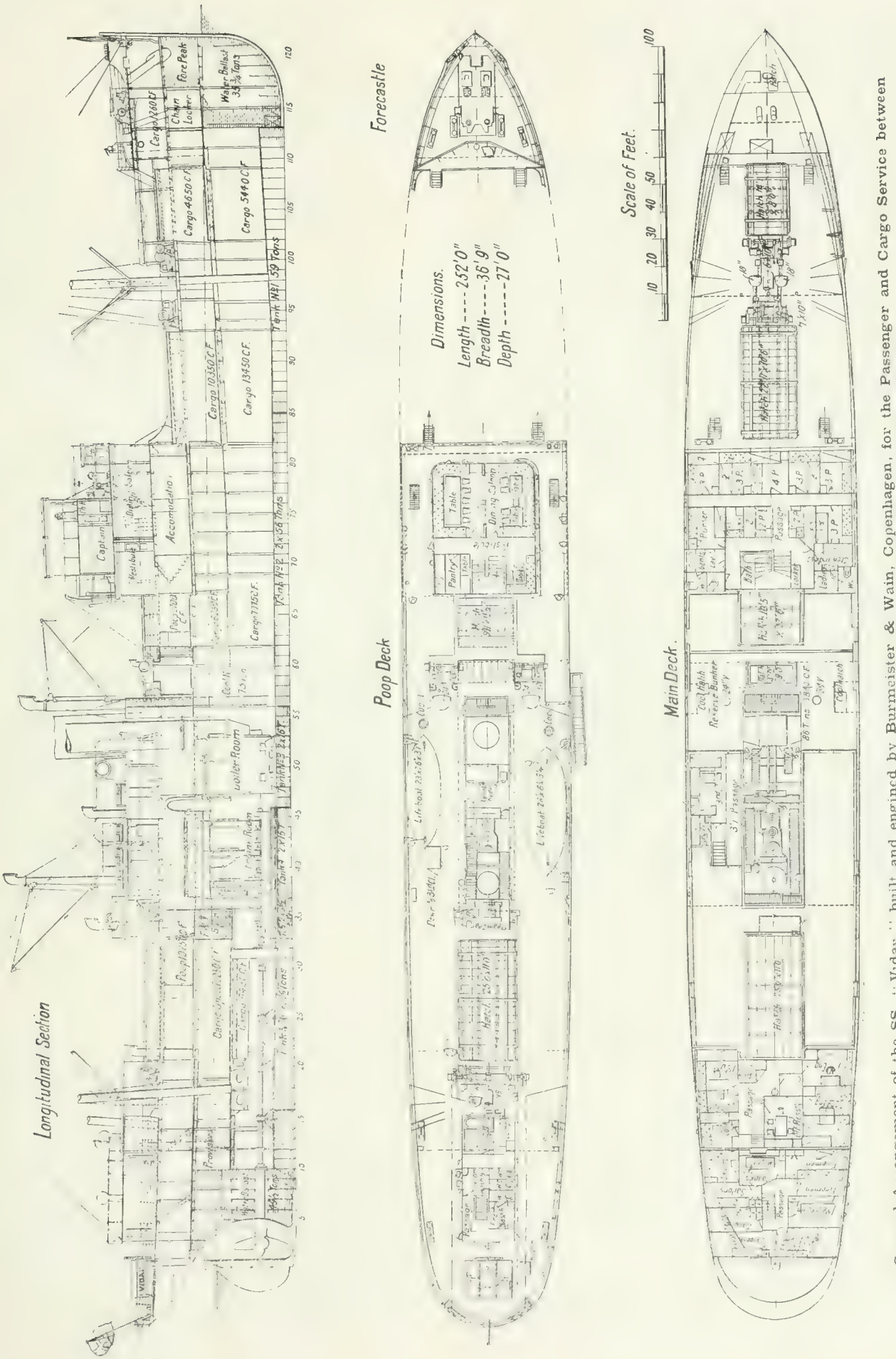
The *Bulletin* of the South Australian Official Intelligence Bureau at Adelaide states that a practical step in the direction of the full utilisation of the waters of the River Murray was made on June 5, when the Governor of South Australia laid a stone marking the site of the first lock and weir, which is to be constructed at Blanchetown. It is calculated that this lock, which is to be called the "William R. Randell Lock," after one of the pioneer navigators of the Murray, will impound the water for a distance of 70 miles back. The work of construction, which will take about two years, will be carried out departmentally under the supervision of Mr. R. C. Cutting, C.E., who was recommended by Major C. N. Johnston, the consulting engineer to the South Australian Government in connection with the River Murray improvements.

The following is a brief outline of the scheme so far as it affects South Australia, and its estimated cost:—Under an agreement which was made in 1913 between New South Wales, Victoria, and South Australia—the three States interested—and the Commonwealth, 35 locks and weirs are to be constructed. The estimated cost of this work is £4,663,000, towards which the Commonwealth will contribute £1,000,000, leaving the balance to be borne in equal shares by the three States mentioned. Those in which South Australia is particularly concerned are the six locks from Blanchetown to the border, and three in connection with the Lake Victoria storage basin. These alone will give a locked navigable river for 235 miles, from Blanchetown to the boundary, and 115 miles from the boundary to Wentworth, N.S.W. Below Blanchetown to the sea mouth, a distance of 171 miles, the river and lakes are all permanently navigable. The Murray constitutes the largest inland waterway on the Australian Continent, the total navigable length of the stream, together with its tributaries, being 3,212 miles.





SS. "Vidar." Midship Section. (*See page* 132.)



General Arrangement of the SS. "Vidar," built and engined by Burmeister & Wain, Copenhagen, for the Passenger and Cargo Service between Denmark and Great Britain of Det Forenede Dampskib-Selskab. (See page 132.)

SS. "VIDAR."

The *Vidar*, which ran her trials in Copenhagen Sound last May, was launched from the yard of Messrs. Burmeister & Wain, Copenhagen, on February 27. The vessel has been built to the order of the Forenede Dampskib-Selskab, Copenhagen, to engage in this company's passenger and cargo service between Danish and British ports, the trade consisting in the main of the export from Denmark of agricultural produce. It will be seen from the illustration below that the company has adopted the practice, now general among neutrals, of painting on the hull the distinctive colours and name of their country.

From the general arrangement drawings on page 131 it will be seen that the vessel is of the well-deck type with long poop and forecastle. The poop deck is 169 ft. and the forecastle 28 ft. The vessel has been built to the Bureau Veritas classification.

The dimensions of the *Vidar* are:—

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
,, ,, to poop ,, ...	27 ft.
[illegible]	[illegible]
[illegible]	17 ft.

For carrying dairy produce extensive refrigerated space is provided, and for the rapid discharge of cargo there are six steam winches and other modern unloading appliances. Steam steering gear has been fitted.

The engines, of 1,650 i.h.p., by Messrs. Burmeister & Wain, are of the triple-expansion type, with cylinders 22, 36 and 60 in. in diam., with a stroke of 42 in. Steam is supplied from two boilers working at 185 lb. pressure, and on trials a mean speed of 13·75 knots was obtained on 16-ft. draught.

There is accommodation for 31 first-class passengers, with a space set apart amidships for a few third-class. The first-class passengers are housed on the fore part of the poop deck in comfortable cabins accommodating two, three or four persons. There is a dining saloon on the poop deck.

Electric light is fitted throughout.

SS. "Vidar," built and engined by Burmeister & Wain, Copenhagen, for the Forenede Dampskib-Selskab, Copenhagen.

EMIGRATION AND IMMIGRATION.

The official statistics relating to passenger movement from and to the United Kingdom, which have just been issued for June and the half-year to June 30, show large decreases in both arrivals and departures during both periods. The number of British subjects emigrating to places out of Europe during June was 6,559, as compared with 18,031 so emigrating during the corresponding month last year. Of these, 3,860 went to the colonies and British possessions, as against 12,795 last June, while those travelling to foreign countries numbered 2,699, against 5,236. The total of British and alien emigrants to places out of Europe during June was 6,978, or a decrease of 11,529 when compared with June, 1914. British immigrants from places out of Europe totalled 7,905 during June, against 12,083 last June, while the total of British and alien immigrants during that month was 8,206, against 12,659.

The figures for the half-year show the effect of the war over a prolonged period on passenger movements. They show a decrease in the emigration of British subjects of 84,231 at 38,558, while the total of British and alien emigrants is 41,091, against 125,872. Those travelling to the colonies and other parts of the Empire numbered 23,209 during the half-year, or a decrease of 61,822, and those to foreign countries numbered 15,349, a decrease of 12,409. As regards arrivals during the six months, the total, including aliens, was 44,496, which compares with 51,344, a comparatively small decline of 6,848. The purely British immigrations numbered 42,888, or a decrease of 5,171, those from the colonies and other parts of the Empire totalling 31,078, against 34,555, and those from foreign countries 11,810, against 14,504.

GENERAL NEWS SECTION.

PERSONAL.

Rear-Admiral C. E. Anson has relinquished the post of Admiral Superintendent of Chatham Dockyard, on completing his term of office, and is succeeded by Rear-Admiral A. D. Ricardo.

Mr. Maxwell Ballard, the patentee of the "Arch" principle of ship construction, is now a Lieutenant in the Second Line Fourth Northumbrian Howitzer Brigade, Royal Field Artillery.

The death occurred at his residence, "Westwood," Wootton, near Ryde, Isle of Wight, on Thursday last week, of Mr. Edwin Charles Carnt, Managing Director of Messrs. J. S. White & Co., Ltd., shipbuilders of Cowes and East Cowes. The late Mr. Carnt, who was in his 58th year, went to Cowes some 19 years ago, after a successful career at the Admiralty. He held the position of director, but later, on the retirement of Mr. Lee White, he filled the office of managing director with conspicuous success. His chief characteristics were rare business capabilities, excellent technical knowledge of the marine industry in all its phases, together with sound judgment, thoroughness and unerring tact. It has been entirely due to his extraordinary energy, progressive policy and enterprise that the rapid extension of the works on both sides of the Medina is due. To-day the Cowes yards are amongst the foremost in the kingdom in the construction of torpedo-boat destroyers, other warships of this type and marine engines. Several large and important new departments have been added during the last few years under his able supervision, each of which has been marked with that same degree of success as the shipbuilding yards. The chief has undoubtedly been the seaplane industry, which he has much fostered and encouraged. In connection with this aviation department it is interesting to recall that at the last Olympia exhibition, at which Messrs. J. S. White & Co. had a "Wight" seaplane on show, the late Mr. Carnt had the honour of being presented to the King, when His Majesty was making an inspection of the machine. He was a man of strong personality, honourable in all his dealings, a man amongst men. He was always approachable in difficulties and business affairs, and his treatment of the men's grievances gained for him their unbounded respect and admiration. He was really too busy in commercial life to fulfil any active public offices, but as a member of the Cowes Harbour Commissioners his advice and opinions were much valued. The deceased gentleman was deeply interested in all matters that concerned the welfare of the towns of East and West Cowes, and he gave liberally to all deserving and charitable institutions. He was a member of the Institution of Civil Engineers, also a life Vice-President of the East Cowes Frank James Memorial Cottage Hospital, a Director of the Southampton and Isle of Wight Steampacket Company, Ltd., a Director of the Freshwater Gas Company, President of the Cowes Football Club (to whom he presented the Westwood Charity Cup), and also prominently identified himself with the Red Cross work in the Island. His loss will be deeply mourned, for he was esteemed and respected universally both in commercial and private life. Sincere sympathy is felt for his widow in her irreparable loss. The late Mr. Carnt left no children. Amid numerous signs of mourning the remains were interred in the pretty little churchyard at Whippingham on Monday afternoon. A large number of influential people were present to pay a last token of respect, and there were also a large number of the employees and officials of Messrs. J. S. White & Co., who joined the sad procession from the church to the graveside.

The late Mr. E. C. Carnt,
Managing Director, J. S. White & Co., Ltd.

Major-General Sir Percy Girouard has been re-elected a director of Sir W. G. Armstrong, Whitworth & Co. (Ltd.), and Colonel A. G. Hadcock and Lord Sydenham have also been elected to the directorate.

Herr Ballin, Director-General of the Hamburg-Amerika Line has at last received the decoration of the Iron Cross. The infliction however, has been mollified by the announcement that it is of the second class.

The Board of Trade have awarded a piece of plate to Mr. Jörgen Emil Marius Jörgensen, master of the Danish schooner *Noah*, of Svendborg, in recognition of his services to the shipwrecked crew of the steam drifter *Kathleen*, of Peterhead, which sank off the Orkneys on June 3 last.

Mr. W. E. Grayburn, many years Resident Manager at Goole to the Aire & Calder Navigation and a prominent member of the Humber Conservancy Board and the Hull and Goole Port Sanitary Authority, has received gifts of a gold watch and an inscribed silver salver from the commercial community at Goole on the occasion of his retirement from public and commercial life.

Mr. A. Beesley, General Manager of the Taff Vale Railway, was recently, on the motion of Mr. W. Law, Manager of the Swansea Harbour Trust, seconded by Mr. J. H. Vickery, Manager of the Alexandra (Newport and South Wales) Docks & Railway Company, for the 10th time re-elected President of the Bristol Channel Dock Owners' Association for the ensuing 12 months.

Captain J. W. Howgate, a well-known commander of Wilson liners at Hull, has been officially complimented, together with his chief engineer, by the Lords of the Admiralty for the courageous way he handled the liner *Truro* when the vessel was sunk in the North Sea by a torpedo from a German submarine on June 6 off the Scottish coast. The vessel was chased and heavily fired upon before the enemy captured and sunk her.

Mr. John H. Gans, President of the Gans Steamship Line, of No. 10, Broadway, and long a prominent figure on the New York Produce Exchange, died recently. He was in his 49th year. Mr. Gans was for many years active in the shipping business of New York. Previous to his organisation of the Gans Steamship Line, in 1908, he had been for 10 years an active member of the Steamship Committee of the New York Produce Exchange.

The death is announced from New York of Mr. William Mills Ivins. Mr. Ivins was a well-known authority on export and shipping law. For several years he was an active partner in the firm of W. R. Grace & Co. He was also for many years President of the United States & Brazil Mail Steamship Company. In 1897 he went to Russia for the Cramp Shipbuilding Company, and secured for them orders from the Russian Government for the construction of war vessels amounting to some $8,000,000.

The death has taken place of Mr. John Fleetwood, the former Passenger Manager for the White Star, American and Dominion Lines in Liverpool. Mr. Fleetwood, who was 64 years of age, only retired from these companies in December last, after 40 years' connection with Liverpool shipping. He was then presented with

an illuminated address, together with a cheque for a large amount, subscribed for by shipping men and Atlantic travellers, not only in Great Britain but in other parts of Europe and the United States. The funeral took place at Wallasey Cemetery on Tuesday, this week.

Australian mail advices report the death at Wellington, N.Z., of Captain E. J. Evans, Marine Superintendent at North Island for the Shaw, Savill & Albion Company. The deceased was in his 62nd year.

The Board of Trade have awarded a piece of plate to Mr. Olaf Bjornes, master of the Norwegian ss. *Knut Alf*, of Christiania, in recognition of his services to the shipwrecked crew of the schooner *Express*, of Plymouth, which sank in the Bristol Channel on June 8 last.

FROM OUR CORRESPONDENTS.

CLYDE AND DISTRICT.

(From Our Own Correspondent.)

Glasgow.

The changed condition of the shipbuilding industry at the present time is reflected in the activities of the steel works. There is comparatively little doing in the making of steel for mercantile vessels, but there is great pressure for the delivery of plates and sections for the smaller class of warships. Mills which are usually employed in rolling the heavier class of plates are not therefore securing full tonnages, as the bulk of Admiralty material is of a lightish nature. Nevertheless all the mills are fully employed, and considerable pressure is being put on firms for delivery. Fairly large shipments of steel are coming to the Clyde weekly from the United States and Canada. The total amount landed in one month recently was 4,237 tons, of a total value of £32,526. The consignments from the United States are sent mostly through Baltimore.

Harbour Rates at Glasgow.

It is probable that before very long there will be an entire revision of the dues on shipping and goods at Glasgow Harbour. Last week the Trustees of the Clyde Navigation decided to make investigation regarding the adequacy and incidence of the existing rating and revenue-raising powers of the Trust, with a view to increasing the revenue on account of the increased cost of carrying on the undertaking, and the prospect of a further advance in costs taking place within the next few years. As this matter was referred to the Committee of Management which consists of all the Trustees, there is no doubt the matter will be gone into very thoroughly. It is probable that new Parliamentary powers will have to be obtained before any drastic changes can be made in the harbour rates. The Act under which the present charges are levied was passed about 60 years ago. Since then great changes have taken place in the trade of the port. Among the matters which will certainly come up for review is the present method of allocating certain berthage and shed accommodation to individual shipowning firms, and the charges imposed for such berthage and facilities.

Shipyard Workers Relief Fund.

The employees of Messrs. Yarrow & Co., Scotstoun, have issued a balance sheet in connection with their contributions towards a fund for the relief of distress occasioned by the war. The committee in charge of the fund state that from August 22, 1914, to April 30, 1915, the actual income of the fund was £1,776. Of this sum £1,345 10s. 7d. was spent on giving relief, and £14 13s. 9d. was expended on a New Year dinner and entertainment. The balance in hand at the end of April was £402, while the cost of administering the fund was less than 1 per cent. There are at present over 100 cases in receipt of relief. Contributions from the firm of Messrs. Yarrow & Co. amounted to £865.

THE NORTH-EAST COAST.

(From Our Own Correspondent.)

Newcastle-on-Tyne.

Work has now resumed its normal volume, although somewhat less regard has been paid to the August Bank Holiday than in previous years, and the leave was a restricted one. Upon the whole little complaint can be made on account of the men overstaying the authorised vacation. Commercial work is still very restricted, and, under the exceptional conditions it is not at all surprising that but very few inquiries are in circulation for new tonnage. Several second-hand steamers have lately changed hands at quite record figures. During last month 8 vessels were launched from Tyne yards as compared with 9 launched during the same month of last year. This year's total is 58 vessels of all classes as compared with 51 launched during the first 7 months of last year. On the Wear, only 2 vessels, aggregating but 4,860 tons—the ss. *Rocco*, built by Messrs. Robert Thompson & Sons, Ltd., for the Orders & Handford Steamship Company, and the ss. *Shuna*, built by Messrs. John Crown & Sons, Ltd., for Messrs. Glen & Co., of Glasgow—were launched last month, bringing this year's total up to 22 vessels of 73,825 tons as against the 44 vessels of 174,318 tons launched during the first 7 months of 1914. Ship-repairing is of a fluctuating character, and few orders of any special importance can be reported, although practically all of the larger firms on the Tyne and Tees have plenty of work on hand to keep their graving docks employed for a few weeks ahead. The manufactured iron and steel works continue to be employed at high pressure, suffering from a shortage of labour. Prices are firm but remain unchanged.

SOUTH WALES NOTES.

(From Our Own Correspondent.)

Cardiff.

For the past fortnight five tips at the Swansea docks have been idle owing to a dispute between the tippers, the railway companies as owners of the tips, and the Swansea Harbour Trust. The men allege that preferential treatment is given to the Harbour Trust tip, and that consequently those employed on other tips suffer financially. A way out of the difficulty was the suggestion by the men that all their earnings should be pooled, but the contractors of the railway companies would not agree to this for they were averse to other than their regular hands working their tips, a contention which was upheld by the railway companies. The men, however, regard this objection as "quibbling," being of opinion that any person familiar with the work is quite capable of operating the tips and that they have a right, after a long period of duty, to allow another man to take on their job. The Board of Trade has taken the matter in hand and the parties affected are, it is understood, in close touch with each other so that there is justification for the view that is gaining ground that the dispute will be amicably arranged in the near future. Imports at Swansea during July last totalled 91,800 tons, or about 20,000 tons less than in the corresponding month of 1914, while coal and coke exports reach 290,445 tons, a decrease of no less than 127,190 tons.

Ship-Repairing.

Ship-repairers are actively engaged, but with a number of heavy jobs still in hand, particulars of which have already been given in these Notes, little that is new is to be recorded. A strike of fitters which took place at Messrs. C. H. Baileys' works at Barry, on account of the contention that too many apprentices are employed has now been settled and work was resumed on Friday last. According to the rules of the Amalgamated Society of Engineers, 1 boy is allowed to 3 men, but Messrs. C. H. Bailey, it is alleged, had 51 boys to 19 men. The Bute Shipbuilding & Engineering Company, Ltd., and the Mercantile Pontoon Company, Ltd., are busy with heavy stem repairs to the steamers *Gerasimos* and *Theofano Siderides*, illustrated in last week's *Shipbuilding and Shipping Record*, while the Cardiff Channel Dry Docks & Pontoon Company, Ltd., are renewing about 16 side plates on the steamer *Quantock*. Hills' Dry Docks & Engineering Company, Ltd., are actively employed with very extensive bottom and internal work on the steamer *Woodbridge*, while Messrs. J. Shearman & Co. are renewing a considerable portion of the forepart of the bottom and stem of the steamer *Clutha River* through which a rock pierced. The Mountstuart Dry Docks, Ltd., are carrying out heavy bottom and internal repairs to the steamer *Kingsway*, renewing about six bow plates and part of the stem of the steamer *Sunningdale*, and also a dozen plates on the starboard side of the steamer *Penolver*. Messrs. Elliot & Jeffery are effecting boiler repairs to the steamers *Carn Brea* and *Pandelis*, bow damage and general repairs to the steamer *Glenalmond*, general work to the *Atlantico*, and sundry repairs to the *Frixos*. The Barry Graving Docks & Engineering Company, Ltd., are busy fitting about 20 shell plates to the steamer *Bampton* besides renewing about 100 rivets and half a dozen frames,

while the steamer *Palestrina* requires about 46 bottom plates. The steamer *La Fontaine* is having practically the whole of her deck replated and a few shell plates. Messrs. C. H. Bailey are busy with a good bow job on the steamer *Lowther Range*, which was in collision with and sunk the steamer *Polish Prince* recently. About 20 bow plates, 12 new frames and a new stem are necessary. General work is brisk at Swansea, and all the docks are well employed. The Prince of Wales Company have just taken in hand the auxiliary barque *Discovery* for overhauling, owned by the Hudson Bay Company, on which Sir Ernest Shackleton made his expedition to the South Pole in 1907-9, reaching a point within 97 miles of his goal. Prior to April last the *Discovery* was "laid up" in the London Docks for four years, but has since made a voyage to New York and France, having arrived at Swansea from Falmouth in ballast.

MERSEY SHIPPING AND SHIPBUILDING.

(From Our Own Correspondent.)

Liverpool.

The decision just arrived at by the Mersey Docks and Harbour Board, requiring all cotton ships carrying more than 1,500 bales to discharge their cargoes only at certain berths, is an experiment that will be watched with interest, having regard to the block this traffic has caused in the past few months in the sheds and on the quays over a great part of the dock estate. The aim in view is to minimise delay in the discharge of steamers carrying Government or general cargo which may be urgently required.

There is a mistaken impression abroad that the serious congestion which has prevailed at this port throughout the present year is due to an increased volume of trade on account of the war, and to ships being diverted here from other British ports. Official figures prove the reverse to be the case, though ships that have arrived have no doubt been more fully loaded than in normal times. The following figures, which are official, give the number and tonnage of ships reported inwards and cleared outwards at this port for two periods that enable a good comparison to be made, that is the seven months of 1914, immediately before war broke out, and the same period of this year; also for the two weeks ending July 30, 1914 and 1915 :—

Reported Inwards. Week ending July 30.	Ships.	Tons.
1915	68	146,386
1914	69	184,432
Decrease ...	1	38,046

Cleared Outwards. Week ending July 30.	Ships.	Tons.
1915	69	151,257
1914	78	220,870
Decrease ...	9	69,613

Reported Inwards. From Jan. 1 to July 30.	Ships.	Tons.
1915	2,019	5,164,679
1914	2,115	5,645,385
Decrease ...	96	480,706

Cleared Outwards. From Jan. 1 to July 30.	Ships.	Tons.
1915	2,056	6,384,563
1914	2,170	7,350,436
Decrease ...	114	965,873

The Central Control Board have made an order which will come into force on Monday next limiting the hours of the licensed trade in the Mersey munitions and transport area to 5½ hours a day, namely, 12 noon to 2.30 p.m., and 6.30 to 9.30 p.m.

The drastic new coal order prohibiting the export of coal to all countries with the exception of British possessions will, it is feared, greatly reduce the chances of employment for outward steamers engaged in the coal-carrying trade, besides weakening perhaps still further outward rates in the general cargo trades. The coal exports are almost wholly to foreign markets, and fixtures beyond the 13th inst., when the new order comes into force, are now impossible on this market. These ships will no doubt be attracted to other coal exporting countries, such as the States, where it is reported there is an increased inquiry for tonnage to carry coals as a result of this order.

TENDERS INVITED.

Tenders will be received at the office of the South Australian Harbours Board, Adelaide, up to 2 p.m., on Tuesday, October 19, 1915, for the construction and delivery at Port Adelaide of a steel single-screw tug of the following dimensions:—Length, 100 ft.; breadth (moulded), 21 ft. 3 in.; depth (about), 11 ft. 8 in.; maximum draught not to exceed 10 ft. 6 in.; speed, fully laden, 12 knots. Full particulars can be obtained at the Board's Office, Adelaide, at the Harbour Trust Offices, Melbourne and Sydney, and also at the office of the Agent-General for South Australia, London.

THE FREIGHT MARKETS.

(From Our Own Correspondents.)

London.

Although there has been something in the nature of a pause in homeward chartering from the River Plate, this market maintains a steady demand and boats are now being inquired for right into November. It is understood that boats are proceeding outwards in ballast, and if more ships decide upon this course the rate is hardly likely to go higher than 70s. Recent fixtures from the Plate include the *Echunga*, a 6,400-ton, 10 per cent. boat, which has been taken up at 65s. from San Lorenzo limit to the United Kingdom, with October 10 cancelling. A 4,500-ton 10 per cent. steamer has been conceded 67s. 6d., September 15-October 15. The same rate goes to the *Brookby*, which gives October 5 cancelling. The *Aeon*, a 3,600-ton, 10 per cent. steamer, fixed last week, has 66s. 3d. to the United Kingdom, with options, October 25 cancelling. From Montreal charterers have secured the *Elswick Manor*, 22,000 quarters, 10 per cent., to Avonmouth, at 7s. 9d., August 5-25. The *Iolanthe*, a 20,000-quarter, 10 per cent. boat, has been taken up by Northern Range charterers for prompt loading to French Atlantic ports, at 8s. 9d., oats 2s. less. A number of fixtures are recorded for American coal. The *Boyne* has been closed at 35s. to Rio Janeiro. To Marseilles, the *Southport* has been taken up at 37s. They are both 6,000 tonners. In the case oil section from the States 60 c. has been paid to South Africa, and 53 c. to the Plate or Brazil. It is anticipated that an improvement will soon come about in the Eastern market. From Karachi a 5,600-ton steamer has been closed at 40s., all barley, to United Kingdom, net terms. To two ports United Kingdom, Karachi offers 41s. A steady tone prevails in Gulf chartering for grain for September and October, and 11s. is paid to the *Nirefs*, 30,000 quarters, 10 per cent., to West Italy, September 6-30 lay-days. For outward coal loading from the Tyne there is a good inquiry for boats. In the Bay section there is a slightly easier feeling, and to the Mediterranean rates have shown a fall. At the beginning of this week Genoa and Port Said were both done at 23s. For the leading Bay ports not more than 16s. 6d. is obtainable. The London rate remains at about 7s. Representative Tyne fixtures are:—Caen, 12s. 9d.; Oporto, 19s. 3d.; and Rouen, 13s. 6d. Cardiff reports that no great volume of tonnage is offering, and rates are exhibiting an hardening tendency. Thus Genoa has been paying 18s., as compared with 17s. a few days earlier, while St. Nazaire was done at 10¾ fr., as against 10 fr. last week. Fixtures recorded include the *Sparti*, at 18s., to Genoa, and a 3,000-tonner at 17s., to Las Palmas-Teneriffe. Partington to Rouen has been closed at 12s. 6d., and Hull to Rouen at 13s. 6d.

Glasgow.

Since business was resumed after the holidays the Glasgow market has been very quiet, and some days there was a lack of definite business reported. For a day or two the new restrictions on the export of coal to allied countries formed the principal topic of discussion, and the view was generally expressed that though there might be little or no diminution of exports to these countries, yet there were likely to arise irritating delays in the granting of licences which might greatly inconvenience shipowners and shippers alike. It may be noted in this connection that very few fixtures in the coal trade to France and the Mediterranean are reported in the Glasgow market this week. One transaction was as follows:—Glasgow to Porto Vecchio, 4,500 tons, 20s. 6d. The homeward markets were —generally speaking—firm in tone and rates were steady. A Glasgow steamer, the *Julia Park*, was fixed from San Lorenzo to the United Kingdom at 65s., August. The River Plate also fixed several steamers for September-October at 66s. 3d. from up rivers. America was steady with owners holding for better rates. There was some activity in the Eastern trades; Calcutta quoted 70s. jute basis, and Bombay offered 52s. 6d. to the United Kingdom. The North Pacific was steady at 95s. to the United Kingdom.

Newcastle-on-Tyne.

The chief item of interest to shipowners and shippers alike this week is the new order prohibiting the shipment of coal cargoes to allied countries, except under licence. It is too early yet to foretell exactly what effect the regulation will have upon the local freight market, but it is certain that complications will arise in the French coasting trade. Even short delays at this end in the near trades will result in very considerable disorganisation of loading turns, but the extent to which this will be possible rests wholly with the authorities. The Advisory Committee of the Newcastle Chamber of Commerce has already made some suggestions to the Coal Export

Control Committee, with a view to facilitating business in the French coasting trade, and an announcement is expected shortly. During the past week, there has not been much activity in the freight market and, tonnage having been plentiful, the general tendency of rates has been to decline. Coasting is steady on the basis of recent rates. North France is, on the whole, weaker and Havre has been fixed for at a reduction of from 3d. to 9d. on the week, while Fecamp is 6d. lower. Boulogne, however, is stronger and Caen 6d. advanced. The Bay is a very poor and dull market, and further reductions of from 3d. to 6d. have been recorded in rates for St. Nazaire. The Mediterranean is again on the easy side. Genoa is from 1s. to 2s. reduced, Marseilles fully 1s. down and Oran easier. Fixtures arranged since the last report include the following:—Boulogne, 600, 13s.; 1,600, 12s. 9d.; Bagnoli, 6,500, 22s.; Calais, 600, 13s.; Caen, 1,100, 13s.; Fecamp, 400, 13s.; Genoa, 3,000, 23s.; Havre, 1,000, 12s. 3d.; 1,650, 12s.; Leghorn, 4,000, 23s.; London, 2,500, 7s., C.T.; Las Palmas, 3,500, 19s.; Marseilles, 4,500, 22s.; from Dunston; Oporto, 1,500, 19s. 6d.; Oran, 1,700, 16s. 6d.; Port Said, 5,600, 24s.; Porto Ferrajo, 6,500, 22s.; Port Vendres, 1,800, 26s.; Rouen, 1,850, 13s. 9d.; 1,100, 13s. 6d.; Rio de Janeiro, 4,000, 24s.; Santander, 1,600, 18s.; St. Nazaire, 1,700, 16s. 9d.; 2,600, 16s. 6d.; Teneriffe, 2,000, 19s.; 3,500, 19s

Liverpool.

Outward freights on this market are for the moment affected in two ways by the new coal restriction order. To fix up before the 13th inst., when the new order comes into force, charterers are ready to stretch a point, but beyond that date there is nothing being done. The outlook for coal tonnage and outward freights generally is at this quiet season very gloomy indeed, and the hoped for recovery to the level that prevailed before the coal strike will of a certainty not be realised until the busy season sets in, or the changed conditions have readjusted things. One effect has been to increase the number of inquiries for coal tonnage at United States ports for shipment to South America and to Europe. In the general cargo trades outward rates keep steady at the recent drop, with little prospect of betterment. Time chartering for the moment quiet, but rates keep steady. An encouraging feature of homeward freights is the strength of the Plate and North American markets. San Lorenzo to United Kingdom holds firmly to the 65s. rate for August loading, and with a good demand for tonnage well ahead, there is reason to believe that better rates will soon be paid. A neutral boat, San Lorenzo to Scandinavian ports has made 82s. 6d. for September. America has a good demand for tonnage, and rates are stiffening accordingly, for September and October loading. Cotton paid 155s. for boat giving 150 ft. from Galveston to Havre; grain commands 11s. 6d. September and 12s. October, Gulf to West Italy, and Northern Range holds to 10s. to same destination for August-September, and a prompt boat has got 10s. 1½d. for 25,000 quarters. The activity also extends to coal, general cargo and deals, the latter offering 140s. from Pugwash. Eastern markets generally are quiet, and without change. Bombay alone has some lines at 52s. 6d. to 53s. 9d. for ore to United Kingdom. Mediterranean homewards also quiet and steady. Nitrate ports to United Kingdom firm at 85s. to 87s. 6d. Sail tonnage outwards has a poor market, but homewards boats can find employment, a notable fixture being maize from South Africa, which paid 46s. 3d. 25s. is offering for sail tonnage to carry coals Australia to nitrate ports.

Cardiff and Swansea.

Anxiety with regard to the probable effects of the new coal prohibition order, which prohibits the export of coal from the United Kingdom without a licence to allied as well as neutral countries considerably restricted chartering operations. Coupled with this, difficulty was experienced in arranging stems, with the result that rates remained at comparatively low levels, the limited inquiry being insufficient to absorb available tonnage offers. The current week, however, has opened with the feeling decidedly better, the announcement of the Press bureaux that the new order is in no way intended to alter the actual state of affairs with regard to exports, but is the consequence of certain domestic legislation by which the price of coal in the United Kingdom has been regulated somewhat diminished the apprehensions of merchants. Tonnage, also, was not offering so freely, and orders were circulating on a better scale, while stems also were less congested. In the circumstances rates displayed a decidedly better tone, and the tendency was in an upward direction. Fixtures completed for Cardiff loading were Barcelona, 17s. 6d.; Genoa, 17s. (three) and 18s.; Gibraltar, 13s. 6d. and 13s.; Lisbon, 10s. (500 tons delivery), 10s. (350 tons delivery), and 10s. 3d. (350 tons delivery); Naples, 16s. 6d. (800 tons delivery); Oporto, 12s.; Valencia, 17s.; and Vigo, 10s. For the Bay and Coast business was slow with rates just about upheld on the basis of Boulogne, 9s. 6d.; Bordeaux, 11½ fr. and 11 fr.; Havre, 8s. 6d.; London, 7s.; Nantes, 11 fr.; Rouen, 10s. 6d. and 10s 9d.; St. Malo, 8s.; and St. Nazaire, 10 fr. and 10¾ fr., while fixtures for the Scandinavian countries were represented by Copenhagen, 15s. River Plate chartering was quiet, Bahia Blanca being done at 24s., and Monte Video 23s., while for the East 25s. was conceded for Bombay and Canary Islands business was represented by Las Palmas-Teneriffe at 17s. (twice). The carrying capacity of the tonnage chartered to load at Cardiff, Penarth, Barry or Newport during the past week was 69,200 tons, or 31,720 tons less than in the preceding week. The Swansea market was also slow and weak, Algiers fixing at 17¼ fr.; and Genoa with options at 18s., while Bay and Coast was represented by Havre at 8s. 6d.; London, 8s.; Rouen, 9s. (twice), 11s. (twice), and 11s. 3d., and St. Brieux, 10s. 6d. The total charterings for the week were 20,980 tons, a decrease of 20,830 tons. Prospects for the current week at both Cardiff and Swansea are much brighter, rates displaying a decided upward trend.

Hull.

The market has to some extent been affected by the new extension of the prohibition of coal export, which requires that licences must also be obtained for cargoes of coal for allied destinations. Nevertheless, it is felt that this will only involve some slight delay. In the Mediterranean direction rates are practically nominal, and the inquiry is poor. Little movement is shown for the River Plate or for the White Sea. The principal activity is for tonnage of all sizes for the coasting trades, chiefly to France. For Rouen 13s. 6d. has this week been paid and repeated, and other rates are 12s. 6d. for Honfleur from Hull, 12s. 6d for Dieppe from Hull, and 7s. for London from Hull, with 7s. to 7s. 6d. ruling according to size from Poole to London.

U.S. NAVAL PROGRAMME.

According to the Central News Washington correspondent, the following is a general outline of the reports that Mr. Daniels, the Navy Secretary, and Mr. Garrison, Secretary of the War Department, will shortly present to Mr. Wilson regarding a definite programme for a larger navy and army. The main features of the navy programme are as follows:—

1. The construction of at least 4 super-Dreadnoughts and probably of 2 battle cruisers of the British *Queen Elizabeth* type. The United States navy at the beginning of this year was 10 first-class ships behind the number required by the policy laid down by the Navy General Board in 1913.

2. The construction of a large number of destroyers. On the basis of the present number of big ships, built or building, the navy is now 92 destroyers short of the complement, determined upon by the General Board, of 4 destroyers to each battleship.

3. The construction of upwards of 100 submarines, furnishing a complement of 50 for each coast.

4. The construction at the aeronautical base at Pensacola, Florida, of a plant for the building of seaplanes capable of turning out at least three machines a week.

5. Increase in enlistment authorisations to bring the enlisted *personnel* immediately up to full strength for all ships, an increase of about 18,000 men.

6. Enlargement of the capacity of the Naval Academy at Annapolis with a view to overcoming at the earliest possible moment the existing shortage of 900 officers, on the basis of the ships built and building.

7. Authorisation for the expenditure of a large sum at the direction of the Secretary of the Navy with a view to taking advantage of improvements and desirable innovations immediately upon their discovery.

8. Legislation giving the Board of Civilian Inventors which Mr. Daniels recently created a status before the law.

Mr. Garrison will ask in his report for an army of regulars and militia numbering at least 410,000, backed up by a large reserve force of trained citizens, equipment for 1,000,000 men, a military academy on the Pacific coast, and more big guns for coast defence.

Colonel Goethals Resigns.—Governor-General Goethals has resigned his position as Governor of the Panama Canal zone as from November 1.

NEWS PARAGRAPHS.

German East Africa Line.—There is reported the launch, on July 15, of an 8,100-ton cargo steamer without name, built by Blohm & Voss for the Deutsche Ostafrika Linie.

Hanseatische Dampfschiffahrts Gesellschaft.—The *Pleskow* cargo and passenger steamer, sister vessel to the *Brun von Warendorp* and *Fredenhagen*, has just been launched in the Henry Koch yards at Lübeck. She is the last of the three vessels ordered by the company prior to the war, for service between Lübeck and Russian ports.

Indo-China Steam Navigation Company.—With regard to the rumours which have recently been current that the Indo-China Steam Navigation Company, Ltd., was about to be absorbed or amalgamated with one of the large steamship lines, the secretary has been directed to say that the Board of Directors have no knowledge of any such scheme.

New Irish Passenger Steamer.—The British & Irish Steam Packet Company's new passenger and cargo steamer *Lady Wimborne* took up her sailings between Dublin, London and the South of England on August 10. Lady Wimborne, Vicereine of Ireland, after whom the ship is named, made an inspection of her in Dublin on the 6th inst. The vessel was built by the Clyde Shipbuilding & Engineering Company, Ltd., Port Glasgow.

Union Company of New Zealand.—In consequence of increasing trade, steps are being taken by the Union Steamship Company of New Zealand to obtain more tonnage, although under the circumstances this is proving a difficult matter. The steamer *Westmeath*, of 8,129 tons gross, has been bought from the New Zealand Shipping Company, as well as three smaller vessels from the Maoriland Steamship Company, of Wellington, N.Z.

German Shipbuilding.—Only the larger concerns, says *Schiffbau*, are obtaining favourable results at present. Shortage of labour and high prices of material make critical the position of small undertakings. Working hours average 54 to 56 hours a week, with overtime in a number of yards. It is said that the Hamburg yards are so busy that workmen petitioned for a bonus to cover increased cost of living, but this was refused by all the yards concerned.

Independent Steamship Company.—The organisation of the Independent Steamship Company, backed by well-known Alaska and Seattle men, is announced at Seattle. It will be under the management of Mr. R. M. Semmes, formerly general freight and passenger agent of the "Admiral" Line. The company plans to charter two cargo and passenger vessels and have them in operation almost immediately from Seattle to south-eastern and south-western Alaska as far as Anchorage, Cook Inlet.

Burmeister & Wain (Copenhagen).—The recently-launched motor ship *Australien* was the 300th new construction carried out by this firm. The first vessel, a small mail steamer of 120 i.h.p., was built in 1876 by 70 employees. The 100th vessel was also a small mail steamer, but the 200th was a 6,000-ton cargo steamer of 2,400 i.h.p., completed in 1899. The firm has since become world-famous, chiefly by reason of its Diesel engine work, and now employs 4,000 men, and has on hand new orders to the value of about £2,750,000.

Norwegian Shipbuilding.—One example of the favourable effect of the war on shipbuilding in neutral countries is to be found in the decision of the Aktiengesell. Fredriksstad Mek. Verksted to extend its equipment so as to build ships up to 12,000 tons. Some such extension has been contemplated for a long time past. The company has paid 5, 7 and 8 per cent. dividends during the past three years, and now employs about 1,150 workmen. Its share capital is to be raised from £88,000 to £138,000 by the issue of new shares at 10 per cent. above par.

Australian Shipbuilding.—An indication of the present cost of building in Australia is furnished in a reply given in the House of Representatives on behalf of the Government. Tenders were recently called for the supply of two dredgers which were required for work at the Cockburn Sound naval base. A British firm (whose name has not been disclosed) offered to build and deliver both under steam at Melbourne for an aggregate of £52,000. The Government rejected this tender, and gave a contract to Messrs. Poole & Steel, of Sydney, for one dredger which will cost £36,127.

Oil-burning Tug "Mexpet."—The forerunner of a fleet of five tug boats building, three in the United States and two in England, for the Mexican Petroleum Company, New York, was recently put into service. This craft, which is named the *Mexpet*, is an oil-burning tug built by the Staten Island Shipbuilding Company and measuring 112 ft. long, 24·6 ft. beam and 14 ft. deep. The boat has been designed with a bunker space of 90 tons of crude oil, which is calculated to be sufficient for 10 days' steaming, so that she could in case of need proceed from New York to Tampico without making a stop. Her engines develop 750 i.h.p., steam being supplied by a Scotch boiler. The accommodation is sufficient for a crew of 11 men.

Improving the U.S. Lighthouse Service.—The United States Lighthouse Service has recently devised a form of printed post card for the use of mariners in reporting unsatisfactory condition of aids to navigation, which, it is believed, will be useful in obtaining prompt information as to defects in aids. The card is printed in such form that it is simply necessary to insert the name of the vessel reporting, with name of aid to navigation, and date and time when observed, together with any desirable additional remarks, and forward to the lighthouse inspector concerned. This arrangement will be given a trial in the fifth lighthouse district, with headquarters at Baltimore, and, if found satisfactory, its use will be extended to other districts.

Demurrage and Bills of Lading.—The attention of shipmasters is drawn by the British Steamship Owners' Association to a case of demurrage in which the Association is now interested and which is proceeding in the Spanish Court. The Spanish lawyer representing the Association has pointed out the necessity of masters seeing that the bills of lading under which the cargo is delivered are, either during or after delivery of the cargo, signed by the receivers. The lawyer points out that it is quite possible that where this has not been done the Courts may not take the bill of lading as evidence, because by Section 718 of the Spanish Code of Commerce such signature is a necessary requisite. Captains should see that the receivers put their signature on the bills of lading when returning them after the discharge of the cargo.

Protracted Board of Trade Inquiries.—For a long time considerable dissatisfaction has been expressed in Liverpool shipping circles at the protracted nature of Board of Trade inquiries when held in Liverpool. The Mercantile Marine Service Association has on several occasions publicly protested against the practice, and as a result of the recent cases of the *Hydro* and *Abeokuta*, the first lasting six and the latter no less than eight days, the Association made vigorous representations to the Board of Trade, who, in replying, whilst in no wise minimising the inconvenience and cost, pointed out that they had no power to deal with the difficulty. The Association at once approached the Home Office, and received a reply that they had been in communication with the stipendiary magistrate on the subject, who hoped to be able to make arrangements for expediting the inquiries in future.

New Grain Contract.—A new form of contract for use by grain exporters, which will put the business on a strictly cash basis, limit the liability of shippers and provide for contingencies arising from the present war in Europe or future wars in which the United States might be involved, has been drawn up by the executive committee of the North American Export Grain Association. Heretofore shipments to British buyers have been made under the rules of the London Corn Trade Association, which have been irksome to American shippers and which, according to *Shipping Illustrated*, have long been denounced as leaning too much in the buyer's favour. Under the new contract disputes are to be arbitrated under the rules of the New York Produce Exchange and by its Arbitration Committee, and the contract, in spite of any correspondence to the contrary, shall be deemed to have been made in New York City and to have been performed there.

British Wrecks Reported in July.—The number and net tonnage of British vessels respecting the loss of which reports were received at the Board of Trade during the month of July, 1915, and the number of lives lost, are as follows:—

Description.	Number.	Net tonnage.	Lives lost.
Sailing	30	4,535*	8
Steam	64	66,582†	132‡
Total	94	71,117	140

* Including 16 sailing vessels of 3,747 tons sunk by German warships.

† Including 16 steamers of 48,712 tons sunk by German warships and 4 steamers of 4,705 tons sunk by mines.

‡ Including 63 lives lost in steamers sunk by German warships and 19 lives lost in steamers sunk by mines.

The figures include the losses of 9 sailing vessels of 935 tons and 4 steamers of 3,658 tons belonging to British possessions abroad,

involving the loss of the lives of 20 persons, of whom 4 were lost in sailing vessels and 16 in steamers. Casualties not resulting in total loss of vessels, and the lives lost by such casualties, are not included.

Canadian Pacific Steamships, Ltd.—It will be recollected that some time ago a company was formed under the title of the Canadian Pacific Steamships, Ltd., to take over the management of the fleet of the Canadian Pacific Railway and the Allan Line. The first meeting was held in Montreal on Monday, when Mr. C. M. Bosworth was elected chairman of the company, and Mr. H. Maitland Kersey appointed managing director, with an office in London, England. The new company will commence operations on October 1.

U.S. Vessels to be Commandeered.—The Board of Inspection and Survey for Ships of the United States Navy Department, of which Captain Henry B. Wilson, U.S.N., is president, is making a survey of all American merchant steamers with a view to their use by the Government in the event of war. Every ship which flies the American flag is being taken into consideration, its tonnage, condition, speed, &c., noted, together with its availability as an auxiliary of the United States Navy. The survey will include the vessels on the Great Lakes as well as ocean-going ships.

The Coal Export Order.—The following statement has been issued by the Foreign Office:

Much unnecessary apprehension appears to have been caused by the publication in the newspapers [illegible] of July 30 of an Order in Council to the effect that "on and after the 13th day of August, 1915, the exportation of coal (including anthracite and steam, gas, household, and all other kinds of coal) and coke" . . . shall be prohibited to all destinations abroad other than British possessions and protectorates.

The Secretary of State for Foreign Affairs desires to explain that this regulation is not in any way intended to alter the actual state of affairs with regard to the export of coal beyond the fact that licences will be required for coal exported to any place which is not a British possession or protectorate.

The order is not designed for the purpose of entirely preventing coal exports, but is the consequence of certain domestic legislation by which the price of coal in the United Kingdom has been regulated, thereby rendering necessary a control of the British coal trade for the purpose of maintaining a proper proportion between home and foreign consumption.

New York-Houston Service.—The Atlantic Gulf and West Indies Steamship Lines have commenced a new cargo service between New York and Houston, Tex. The steamships *Satilla*, *Algiers* and *William T. Palmer*, which have been in the Gulf trade for some time, have been allotted to the service. The new line will be known as the New York-Houston Steamship Line. The steamships taken for the Houston service are owned by the Southern Steamship Company. The *Satilla* inaugurated the service. The vessels are of about 3,000 tons capacity, and will run regularly between New York and Houston, the sailing dates being several days apart. Various interests in Houston have guaranteed sufficient tonnage to support the line.

Congestion at Genoa.—His Majesty's Consul-General in Genoa (Mr. W. Keene, M.V.O.) reports, under date July 6 (says the *Board of Trade Journal*), that the congestion and general condition of that port from January to April last was worse even than during the previous autumn, and the great delay and expense incurred in landing cargo must have caused heavy losses to merchants and trade in general. Steamers of regular lines trading with Genoa with general cargo were not greatly delayed, and, under the circumstances, received reasonable despatch, but tramp steamers bringing full cargoes of cotton, &c., were much delayed. Some steamers arriving with cotton cargoes in December were not discharged until March, and several steamers arriving in January, 1915, were not discharged until May. Arrangements were subsequently made, at considerable extra expense to shipowners, between the port authorities, consignees and shipowners, to permit steamers to deliver cotton cargoes at the ports of Savona and Spezia and the roadsteads of Vado and Santa Margherita. This arrangement facilitated matters a little, and several steamers, which otherwise would have had to wait for their turn at the cotton berths in Genoa Harbour, were able to obtain a quicker despatch.

ORDERS PLACED.

The Kon. Nederlandschen Stoomboot Maats. (Amsterdam) has ordered three 2,000-ton cargo steamers from the Rykee yards in Rotterdam for delivery during the first six months of 1916. The Kon. My. "De Schelde" (Vlissingen) has received an order from Wm. Ruys & Zonen (Rotterdamsche Lloyd) for a 10,000-ton passenger and cargo steamer, to be a sister vessel to the *Buitenzorg*, built in the same yards.

PORT NOTES.

Malaga.—Harbour improvements commenced in 1888 have been finished. There are three new piers, on which large cranes were erected, and which can accommodate ships of deepest draught. On two of these were constructed tracks that connect the harbour with the Audaluz and Suburban railroads. The total number of outgoing passengers from Malaga in 1914 was 2,486, as compared with 3,889 in 1913. Those sailing for Argentina in 1914 were 1,015, against 2,013 in 1913; and for cuba 411, against 526.

Barry Docks.—The first of the six new coal tips which have been under construction at Barry Docks for some time has been opened for traffic. These tips are of the latest model, and it is expected that when the whole are completed it will mean an increase in the coaling facilities of the docks of over 1,000,000 tons per annum. They are of two kinds, fixed and movable, and are so arranged that it is possible to have at least two tips working into a ship at the same time. They have been designed to deal with wagons of up to 20 tons capacity. The tips have been designed and constructed by Sir W. G. Armstrong, Whitworth & Co., Ltd., to the specification of the Barry Railway Company's engineers.

Prince Rupert, B.C.—The big floating dry dock, together with its plant, foundry and machine shops, was expected to be ready for operation by the early part of August. Prince Rupert will then have on its harbour front the finest dry dock plant on the Pacific coast. The cost of the undertaking is said to be approximately $1,500,000. The dock consists of three units, with a total capacity of 20,000 tons. There will be two end sections of 5,000 tons each, and a middle section capable of holding a vessel of 10,000 tons. All the units are interchangeable, and each dock is complete in itself, with pumps and air compressors. If necessary all three sections, or units, could be joined to hold a vessel 600 ft. long and weighing 20,000 tons.

Hudson Bay.—The grading of the railway between Le Pas, Manitoba and Port Nelson, Hudson Bay, a distance of about 400 miles, will be completed this autumn. This season satisfactory progress has been made with the construction of wharves and warehouses at the terminal port, and, as showing how much care is being exercised in this connection, it may be mentioned that the wood for the piers and docks has been brought by steamer from Vancouver, B.C., through the Panama Canal, a passage of about 10,000 miles. Before ice conditions stop work this year it is expected that a good beginning will have been made with the erection of lighthouses and wireless stations in the Bay and Strait, as well as with the provision of buoys.

Newcastle-Port Stephens.—It is proposed to establish a harbour trust to control the northern harbours from the Hawkesbury River to the Queensland border, taking in Newcastle and Port Stephens. Port Stephens is within a few miles of Newcastle, and its natural advantages as a port are much greater than those of its neighbour, and a scheme has been suggested to dredge and deepen Tilligery Creek on the south side of Port Stephens, and extend it 5 or 6 miles till it meets the port of Newcastle at Fullerton Cove. The route of the proposed canal is level and sandy, so that it is considered there will be no great physical difficulties in the way of carrying it out. The advantages claimed for this canal scheme are that vessels would be able to leave or enter Newcastle by the artificial waterway in all kinds of weather. Port Stephens is the haven for coastal craft in rough weather, and it is to be made a naval base, it being said that a whole fleet could be floated in Salamander Bay. Motor boats at present ply on Tilligery Creek, which already has a good depth of water.

COMPANY REPORTS.

International Line Steamship Company, Ltd.—Interim dividend at the rate of 14 per cent. per annum, free of income-tax, on the ordinary shares for the half-year.

The Cuxhaven Hochseefischerei A.G. distributes for the past financial year a dividend of 10 per cent., as compared with 7 per cent. for the previous year.

Greenock Harbour Trust.—The accounts for the year ended June 30 show a credit balance of £5,563, after meeting interest on "A" and "B" debenture stock. The total revenue amounted to £65,607, and the expenditure to £26,766.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF LAUNCHES.

Date of Launch.	Name of Vessel and Type.	Owners.	Builders.	Approx. Dimensions. L × B. × D.	Propelling Machinery and Builders of Machinery.	Remarks.
July 16	**Waltershof,** ss. (trawler).	Hamburg-Cuxhaven A.G., Alte Liebe.	J. H. N. Wichhorst, Hamburg.	118½′ × 23½′ × 13′	Superheaters 400 i.h.p.	10 kts. 10½ ft. draught.
July 24	**Viv,** ss (cargo) ..	Th. Brovig, Farsund, Norway.	A.S. Fredriksstad Mek. Verksted, Fredriksstad Norway.	265′ × 42′ × 20′..	Tr. Exp. 20½, 33, 56 × 36. A.S. Fredriksstad Mek. Verksted.	3,000 tons d.w. cap.
July 29	**B. G. Kronberg,** ss. (cargo).	Erik Kronberg & Erik Brodin, Gefle, Sweden.	A.S. Sørlandets Skibsbyggeri, Fevig, Norway.	265′ × 42′ × 20′..	Tr. Exp. 18, 29½, 50 × 36. A.S. Fredriksstad Mek. Verksted.	3,035 tons d.w. cap.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF TRIAL TRIPS.

July 5..	**Christoffer Ellingsen** (fish transport).	Hindø Dampskibsselskab ..	Akers Mek. Verksted, Christiania.	175½′ × 25′ × 15′	Tr. Exp. 14, 24, 37 × 27 stroke. 600 i.h.p.	12½ kts. Cap., 3,000 cases, each 100 kgs. fish
July 19	**Melville,** ss. (destroyer tender).	U.S. Government	New York Shipbuilding Co., Camden, N.J.	400′ × 54′ × 36½′	Geared turbines. New York S.B. Company.	Drawings, &c., *S. & S.R.*, July 22, 1915.
July 21	**Tarnan,** ss. (cargo) ..	Hanands Ångbåtsaktiebolag, Halmstad, Sweden.	Lindholmens Verkstads Aktiebolag, Gothenburg.	170′ × 30′ × 13½′	Tr. Exp. 17½, 24, 40 × 27. 700 i.h.p. Lindholmens Works.	D.w. cap. 530 tons.
July 28	**Clariesland,** ss. (cargo)	John Kelly, Ltd., Belfast ..	Scott & Sons, Bowling, N.B.	180′ × 28′ 6″ × 10′ 6″.	Tr. Exp. 15, 25½, 41 × 30. 750 i.h.p.	Coasting trade.
Aug. 3..	**Basse Indre,** ss. (cargo)	Soc. Anon. Chargeurs de l'Ouest, Nantes.	Campbeltown Shipbuilding Company.	230′ × 35′ 8″ × 15′ 6″.	Tr. Exp. 18, 27½, 45 × 33. Rankin & Blackmore, Greenock.	1,350 tons.
Aug. 5..	**Lady Wimborne,** ss. (cargo and pass.).	British & Irish Steam Packet Company.	Clyde Shipbuilding & Engineering Company.	260′ × 38′ 2″ × 14′ 6″.	Tr. Exp. 19, 31, 52 × 36.	

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

Name and type.	Tonnage.	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year.	Machinery and builders.	Remarks.
Argyll, ss. (turret dk.)	3,547 gr. 2,282 net. 5,985 dw.	340½′ × 45½′ × 24½′	Sutherland SS. Co. (A. M. Sutherland, Mgr.), Newcastle, to buyers not stated	W. Doxford & Sons, Sunland (1901)	26, 42, 68 × 42 (W. Doxford & Sons)	Price about £42,500.
Armonia, ss. (ex *Santanja*, ex *Weimar*)	4,977 gr. 3,059 net.	413½′ × 47½′ × 29½′	J. J. MacAuliffe, Valparaiso, to Liverpool buyers	Fairfield Co., Glasgow (1891)	31, 52, 83 × 54 (Fairfield Co.)	Price about £38,000.
Boucau, ss. .	1,340 gr. 720 net.	238′ × 36½′ × 14½′	Cie des Chargeurs Francais (Plisson & Co., Mgrs.), Bayonne, to French buyers	Wood, Skinner & Co., Newcastle (1915)	18½, 30, 50 × 33 (N.E. Marine Eng. Co., Newcastle)	Price about £36,000.
Erissos, ss. (spar dk.) (ex *Acacia*)	2,885 gr. 1,848 net.	315′ × 45′ × 14½′	L. Nicolaides, Braila, to D. J. Theophilatos & Co., London	Irvine's S.B. & D.D. Co., W. Hartlepool (1902)	24, 38, 64 × 42 (Richardsons, Westgarth & Co.)	Price about £42,000.
Felicia, ss. (well dk.) (ex *Thurston*)	1,851 gr. 1,116 net.	270′ × 37′ × 18½′	Angf. Aktieb. Felicia (Emil Lofgren, Mgr.), Gefle, to Norwegian buyers	W. Gray & Co., W. Hartlepool (1889)	20, 31½, 53 × 36 (Central Marine Engine Works, W. Hartlepool)	Price about £23,500. Previously sold for £7,500.
Felix, ss. ..	1,837 gr. 1,123 net.	290½′ × 42′ × 19¼′	Acties. Dmpsk. Felix (Grefstad & Herlofson), Arendal, to buyers not stated	W. Dobson & Co., Newcastle (1907)	22, 36, 60 × 39 (N.E. Mar. Eng. Co., Newcastle)	Price about £41,000.
Florentino, ss. (ex *Gunnell*, ex *Cycle*)	3,411 gr. 2,227 net.	331½′ × 48′ × 21½′	Polzeath SS. Co. (Mckenzie & Thomas, Mgrs.), Cardiff, to buyers not stated	J. L. Thompson & Sons, Sunderland (1900)	24½, 40½, 65 × 42 (J. Dickinson & Sons, Sunderland)	Price about £43,500.
Moldavia (spar dk.)	9,500 gr. 4,930 net.	520½′ × 58¼′ × 24½′	P. & O. Steam Nav. Co., London, to Cardiff buyers	Caird & Co., Greenock (1903)	33, 52½, 84 × 54 (Caird & Co., Greenock)	Price about £34,500.
Olympia, ss. (ex *Boston*)	2,961 gr. 1,874 net.	325′ × 48′ × 21¼′	A. S. Vagliano, Athens, to London buyers	Ropner & Son, Stockton (1906)	23½, 39, 64 × 42 (Blair & Co., Stockton)	—
Pytheas, ss. (pt. awning dk.) (ex. *Volage*)	2,690 gr. 1,707 net.	315′ × 42½′ × 17¾′	D. J. Kallimassioti, Piraeus, to Swedish buyers	Richardson, Duck & Co., Stockton (1895)	23, 37, 61 × 42 (Blair & Co., Stockton)	Price about £29,000.
Sarstoon, ss. (spar dk.)	2,929 gr. 1,852 net.	321′ × 43½′ × 14¾′	Scrutton, Sons & Co., London, to Owen, Watkin Williams & Co., Cardiff	J. Readhead & Sons, S. Shields (1902)	25½, 42, 68 × 45 (J. Readhead & Sons)	
Sotirios, ss. (well dk.) (ex. *Lobelia*)	2,942 gr. 1,913 net.	314′ × 40½′ × 20¼′	T. Pangalos, Syra, to Danish buyers	Irvine & Co., W. Hartlepool (1892)	23, 37½, 61½ × 39 (T. Richardson & Sons, Hartlepool)	Price about £27,000. Sold in Nov., 1910, for about £9,000.
Stadia, ss. (spar dk.) (renamed **Menapian**)	2,947 gr. 1,872 net.	321′ × 43½′ × 14½′	Scrutton, Sons & Co., London, to Owen, Watkin, Williams & Co., Cardiff	J. Readhead & Sons, S. Shields (1902)	25½, 42, 68 × 45 (J. Readhead & Sons)	—
Steenbergen, ss. (spar dk.) (ex. *Wensleydale*)	3,935 gr. 2,456 net.	366′ × 48½′ × 17½′	Stoomv. Maats. Indische Lloyd (N.V. Furness Scheepv. en Agentur Maats.), Rotterdam, to Konin. Hollandsche Lloyd, Amsterdam	Sir J. Laing & Sons, Sunderland (1903)	25, 41, 67 × 45 (G. Clark, Sunderland)	
Surrey, ss. (shelter dk.)	5,987 gr. 3,811 net.	420½′ × 54′ × 28½′	Federal S.N. Co., London, to Blue Star Line, London	Hawthorn, Leslie & Co., Newcastle (1899)	30, 48, 78 × 54 (Hawthorn, Leslie & Co.)	Price about £35,000.
Vard, ss. ...	3,839 gr. 2,398 net.	346½′ × 50¾′ × 24½′	Dampsk. Vards Aktierederi (A. Jacobsen, Mgr.), Christiana, to Transatlantic Co., Gothenburg	J. Priestman & Co., Sunderland (1911)	24½, 40½, 67 × 45 (N.E. Mar. Eng. Co., Sunderland)	—

SHIPPING SHARE MARKET.

The [illegible] business done during the holiday was very slow, but there was evidence [illegible] that the investment powers of the public [illegible] In the steamship section there was not a [illegible] "Caronia" excepted" owing to the absence of any large number [illegible] holders of shares in companies' securities apparently being content with the prospects which the future holds out for them. They are encouraged in this attitude by the favourable reports which continue to be received. We referred last week to the activity in Indo-China Steam Navigation Company's shares and to the absurdity of the report that the company was to be taken over by the P. & O. The company has now officially contradicted the rumour. The shares continue to change hands at increasing quotations, and it is probable that some further statement will shortly be made respecting the reported agreement with the Japanese companies regarding the rate cutting on the Calcutta line. The deduction of some of the dividends recently announced causes prices of many shares to again look cheap. Furness Withy shares are down to 2s. 6d. ex div., and Court Line to 22s. Cunards stand at 17s. 6d. at which buyers have been forthcoming, and among the higher-priced shares P. & O. and Royal Mail keep firm. There has been a report that some managers of steamship companies have held an informal conference respecting the proposals of the Government to tax war profits, but no information can be obtained of any such meeting having been held. The market rightly takes the view that, whatever may be the attitude of the Government towards shipbuilding undertakings, there is no justification for taxing steamship companies' profits during war time, seeing that the latter take a big risk in many ways and may have to pay very high prices to make good the wastage of shipping after the war. Shipbuilding companies' securities and kindred shares maintain a steady tone although there is not much business being transacted.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING AND DOCKS.

Name.	Share and paid.	Extreme quotations, 1913.	Last ann. div. % or per share.	Yield. %	Quotation, July 30, 1914.	Cash price during week.
	£					
African S.S.	20	21⅜–19⅞	7	7⅛	18–20	—
Alfan Line ... ... Deb.	100	95–89	4	4½	93½–95½	—
Anchor Line ... Cum. pref.	10	10½–10	5½	5½	10–10⅜	10⅜
Do. ... ... Deb.	Stk.	98½–98½	4½	4½	104–106	104⅜
Argentine Nav. ... Cum. pref.	1	29/6–25/3	3	4½	1/16–1/16	1/16
Do. ... ... Deb.	Bds.	104⅜–100½	6	6⅛	98–100	91½
Australasian Un. S. Nav. Deb.	Stk.	84½–81½	4	4¾	80–83	—
Beltast Steam ... "A"	10 (5pd.)	5⅜–4⅜	5	3	4⅜–5⅛	—
British & African Nav. Deb.	Stk.	102–101	4½	4⅜	96⅜–98½	103
British India Nav. ... Deb.	Stk.	104–98⅜	4½	4½	99½–100	91⅛
Buckna'l SS. ... Cum. pref.	2	2⅛–1⅜	5⅓	—	—	—
Cairn Line ... ... Deb.	Bds.	102–94	5	5½	91–93	—
Clan Line ... ... Ord.	10	142–9	15	10⅝	10⅝–11	13 1/16
Court Line ... ... Ord.	£1		10	9	—	1½
Cunard SS. ... ... Ord.	1	35/9–28/–	20	9	1⅞–1⅝	2⅛
Do. ... Cum. pref.	Stk.	103–97⅛	5	5⅛	99–101	90⅜
Do. ... ... Deb.	Stk.	102⅜–99	4½	4⅛	101–103	96
Elder Line ... ... Deb.	Stk.	103–100	4½	5	98–102	90
Elder Dempster ... Cum. pref.	1	1⅜–1⅜	5½	5 11/16	1/16–1 1/16	7/8
Do. ... ... Deb.	Stk.	105–99½	5	5⅛	102–104	87½
Ellerman Lines ... Pref. Ord.	10	10⅜–10⅞	6⅛	6	10–10⅛	9⅛
Do. ... Cum. pref.	10	10 1/16–10 1/16	4⅝	4⅝	10–10⅛	9 1/16
France Fenwick ... Cum. pref.	5	97/6–92/6	5⅛	5½	4⅜–5	4½
Furness, Withy ... Ord	1	34/3–25/6	10	6⅝	1½–1⅝	1½
Do. ... Cum. pref.	10	9⅜–9	5	5⅛	9–9⅛	8⅝
General Steam Nav. ... Ord.	7½	6 1/16–5⅜	6	8	5⅜–5⅝	5⅛
Do. ... ... Pref.	8	7⅜–7⅛	6	8	7⅛–7⅜	7⅛
Houlder Line ... Cum. pref.	5	85–80	Nil.	Nil.	2⅜–2⅝	5
Do. ... ... Deb.	Stk.	84⅜–80	4⅜	5⅛	81–86	83
Houlder Bros. ... Cum. pref.	5	4⅛–3	5⅜	6	4⅛–4⅜	4⅜
Do. ... ... Deb.	Stk.	85–78	4⅜	5	81–86	90⅜
India Gen. Nav. & Rly. ... Ord.	10	9⅜–7 1/16	8	9½	9–10	8⅛
Indo-China N. ... Pref. Ord	5	5 1/16–87/6	6	6½	3⅛–4⅜	5⅛
Irrawaddy Flotilla	40	125–114	15	5 7/16	126⅜–128½	—
King Line ... ... Ord.	10	9 1/16–8	8	7⅞	8⅛–9⅜	10 3/16
La Guaira Harbour ... Deb.	Stk.	87–79	5	7⅛	78–80	65 5/16
Lamport & Holt ... Cum. pref.	£1	1 1/16–29/32	6	6	1 1/16–1 1/8	1 5/16
Leyland (F.) ... Cum. pref.	10	11–9⅝	10	12½	7⅞–8⅛	8
Do. ... ... Deb.	100	99½–95⅜	4	4	99–101	—
Mercantile SS. ... ... Ord.	5	8 1/16–6¾	17½	10½	6–6⅝	8⅛
Do. ... ... Pref.	1	18/–16/3	5	5¼	¾–1	29/32
Moor Line ... ... Ord.	10	14–11⅝	15	—	—	—
Nelson Steam Nav. ... Deb.	100	103½–99	5	5⅛	99⅜–101½	97½
New Zealand ... ... Ord.	8	20½–10⅜	8	3⅜	14½–15½	19
Do. ... ... Deb.	Stk.	95–92½	4	4⅜	92–94	89¼
Nitrate Producers SS. ... Ord.	5	8⅝–8	12½	7⅛	8–8⅛	12¾
Do. ... Cum. pref.	5	5–97/6	5	—	4⅜–5	—
Oceanic Steam. Nav. ... Deb.	100	100–96⅜	4½	4⅝	97–99	93⅛
Orient.Stm.Nav.Co. Cum. pref.	10	10⅜–9 1/16	5	5 5/16	9⅛–10	9 1/16
Do. ... ... Deb.	100	99–94½	4½	4⅜	98–100	98
P. & O. S. N. ... Cum pref.	100	125⅜–107	5	5⅛	109–112	96½
Do. ... ... Def.	100	350–270	15	5 7/16	270–290	263
Do. ... ... Deb.	Stk.	91–83	3½	4¼	84–86	80⅜
Prince Line	1	25/3–20/–	5	3⅛	1–1⅛	1 3/16
R.M.S.P. ... ... Ord.	100	143–100⅜	Nil.	Nil.	82–87	72 5/16
Do. ... ... Pref.	Stk.	100⅜–96	5	5⅛	98–101	87 5/16
Do. ... ... Deb.	Stk.	104⅜–100½	4½	5⅛	101–103	87
Shaw, Savill & Alb. Cum. pref.	5	5 1/16–96/3	5	—	4⅜–5	—
Shell Transport ... ... Ord.	1	5 1/16–96 10½	30	5⅝	4–4⅛	4⅛
Do. ... Cum pref.	10	11 1/16–10	5	5 1/16	10⅝–10⅞	9 1/16
Sutherland SS. Co.	£1	1¼–1	20	13½	1–1⅛	1 1/16
Union-Castle SS. ... Cum. pref	10	10–9⅜	4½	5	8⅛–9⅛	8⅛
Do. ... ... Deb.	Stk.	95½–92	4	4⅛	93–95	89 5/16
Union SS. of N. Z. ... Deb	Stk.	95–91	—	—	—	7⅛
West Hartlepool ... ... Pref.	10	4⅜–3½	Nil.	Nil.	2⅝–3⅜	7⅛

INSURANCE.

Alliance	20 (2·4 pd.)	12⅞–11⅝	12 -	6⅛	11⅞–12⅜	9⅜
Do. new shares	1	14 1/16–12⅝	12/-	5⅓	13⅜–14⅜	10 1/16
Indem. Mutual Marine	15 (3 pd.)	10 1/16–8⅜	18⅓	6	10–11	9
London Assurance	25 (12½ pd.)	54–49	20	5⅛	54–56	45 1/16
Marine Insurance	2 (1·5 pd.)	3⅝–3 6/32	45 -	6⅝	3⅝–3⅝	3⅝
Maritime Insurance	10 (2 pd.)	5⅜–4 1/16	12½	—	8 1/16–8⅜	—
Merchants' Marine Insurance ...	10 (2½ pd.)	6⅝ 3 6 1/32	7½	5	4–4⅛	3 1/16
N. British & Mercantile Ord.	25 (6¼ pd.)	40 - 38	40/-	5⅛	40⅝–41½	35 1/16
Do. Pref.	Stk.	100⅜–96⅜	4	4⅛	98–100	90⅛
Phœnix Assurance	10 (1 pd.)	7⅜–7	40	6⅛	7¾–8⅛	6 15/16
Reliance Marine	10 (2 pd.)	7 6⅛	17½	4½	7 1/16–7⅜	7⅛
Royal Exchange Assurance ..	Stk.	210–196½	10	5⅛	213–218	189⅜
Sea Insurance	10 (2 pd.)	20 17	8	4	20 21	20 1/16
World Marine, Limited	5 (2 pd.)	25 —23½	5	5⅛	1 1/16–1 1/16	1 1/16

* With arrears. † Includes 2½ bonus.

IRON AND STEEL.

Name.	Share and paid.	Extreme quotations, 1913.	Last ann. div. % or per share.	Yield. %	Quotation, July 30, 1914.	Cash price during week.
	£					
Babcock & Wilcox... ... Ord.	1	69 4⅛–56 3	16	5⅛	2⅛–2⅜	2 1/16
Baldwins ... Cum. pref.	1	22 6–21 3	5⅓	5 1/16	1 3/16–1 1/16	1 1/16
Do. ... ... Deb.	Stk.	100⅛–100¼	4⅛	4⅛	97–99	99
Bayliss, Jones ... Cum. pref.	1	—	5	7½	⅜–⅝	5/16–1/16
Bell Bros. ... ... Cum. pref.	10	12 1/16–11	6	5 1/16	11⅛–12⅛	10 1/16
Do. ... ... Deb.	Stk.	98–96⅜	4	4 1/16	96–98	96–98
Bessemer (Henry) ... Ord.	1	1 1/16–1 1/16	10	8⅜	1/16–1 1/16	1 1/16–1 1/16
Bolckow Vaughan ... Ord.	1	22/6–19/4½	6	6⅛	1 1/16–1 1/8	1
Do. ... ... Cum. pref.	20	21⅛–20/–	5	5⅛	20–21	19½
Cargo Fleet Iron ... ... Ord.	1	11 10½–7/6	2⅜	5	1/16–1/16	1/16
Do. ... ... Deb.	100	91–85½	4½	5⅛	89–92	87
Consett Iron Co. ... ... Ord.	1	88/6–74/6	30	7½	3½–3⅝	3⅝
Dominion Iron & Steel	Bds.	100⅛–88½	5	6⅛	83–87	77 1/16
Dorman, Long ... ... Ord.	1	21/6–16/9	7½	8⅜	2⅛–2⅜	1 1/16
Do. ... ... Deb.	Stk.	88½–85⅜	4	4⅝	87–90	84⅛
Ebbw Vale Steel & Iron Ord.	1	18/–16/–	10	10⅛	1/16–1/16	1/16
Guest, Keen & Nettefids Ord.	1	68/9–61/3	15	5	3⅛–3⅛	3
Do. ... ... Cum. pref.	5	5⅛–5⅛	5	4⅞	5⅛–5⅛	5⅛
Do. ... ... Deb.	Stk.	100⅛–95⅜	4	4⅛	96–98	82⅛
Hadfield's Steel Foundry Ord.	1	63/–58/9	22½	7 1/16	3–3⅛	3⅛
Hawthorn (R. & W.) Leslie Ord.	10	13–12	10	7⅛	13⅛–13⅜	13 1/16
Ibbotson Bros. ... ... 5 (4 pd.)		7–5⅜	10	7 1/16	6–6⅛	6–6⅛
Jessop (W.) & Sons ... Ord. 5 (4 pd.)		6⅜–6⅛	15	11 1/16	6⅛–6⅜	6⅛
Lanarkshire Steel Cum. pref.	10	7⅛–6⅛	5	6 1/16	5⅛–6⅜	6
Lysaght (J.) ... Cum. pref.	1	27/6–25/–	6	5	1⅛–1⅛	1⅛
Do. ... ... Deb.	Stk.	108⅛–102⅜	4⅛	—	104–106	—
Manganese Bronze ... Ord.	1	⅜–⅛	6	11	½–⅝	⅝
Do. ... ... Cum. pref.	1	1–⅝	8	6 1/16	¾–1	⅞
North-Eastern Steel ... Deb.	Stk.	89–92	4½	—	—	—
Palmers Ship & Iron "A"	1	1/16–1/16	Nil.	Nil.	1/16–1/16	—
Scott (Walter) ... ... Ord.	1	16/–14/6	5	6½	½–¾	½–⅝
Do. ... ... Deb.	Stk.	86–82	4	4⅝	81–82	89–91
Sheffield Forge ... ... Ord.	1	1⅞–1⅜	12½	7	1⅛–1⅜	1⅜
Shelton Iron & Steel ... Deb.	100	99½–90	5	5½	93–98xd	94½
S. Durham Steel & Iron Ord.	1	35/–23/6	10	6 1/16	1 1/16–1⅛	1 1/16
Do ... ... Cum. pref.	1	20/6–19/–	6	5 1/16	1⅛–1 1/16	1 1/16
Do. ... ... Deb.	Stk.	95–98	4½	4⅝	90–92	90–92
Steel Co. of Scotland ... Ord.	10	12⅜–8⅜	5	5⅜	8⅜–9	8⅛–9⅛
Stewarts & Lloyds Pref. ord.	10	21 1/16–20	10	5⅛	20–21	19 1/16
Do. ... ... Cum. pref.	10	14 1/16–13⅛	6	4⅜	11 1/16–13 7/16	13 1/16
Stone (J.) ... ... Cum. pref.	10	9⅛–9	5	5⅛	8¾–9¼xd	9 1/16
United States Steel ... Ord.	100$	71⅜–50	3	4¼	61–61⅛	7 5/16
Do. ... ... Cum. pref.	100$	113⅜–104½	7	6⅓	112–113	117 5/16
Vickers Ltd. ... ... Ord.	1	43/6–33/3	12½	7½	11⅛–11⅜	1⅛
Do. ... ... Pref.	Stk.	106¼–99	5	5⅛	104–107	99½
Do. ... ... Deb.	Stk.	100⅜–91½	4	5	96⅜–98⅜	80
Weardale Steel ... Def. ord.	1	21 —17/–	6	7⅛	⅜–1 1/16	1 3/16
Do. ... ... Cum. pref.	1	20 1/16–18/–	6	6⅝	1⅛–1	1 1/16
Do. ... ... Deb.	Stk.	77⅜–73¼	4	—	77–80	—
Workington Iron & Steel Ord.	1	16/6–12/3	6	8½	2 1/16–2 3/32	1 5/32

SHIPBUILDING AND MARINE ENGINEERING.

Armstrong, Whitworth Ord.	1	60 —39/	12½	6	1 31/32–2 3/32	1 1/32
Do. ... ... Cum. pref.	5	95 —84/6	4	5	4 1/16–4 1/16	3 15/16
Do. ... ... Deb.	Stk.	98⅜–94⅛	5	5⅛	96–98	89½
Beardmore (W.) ... ... Deb.	100	96⅜–91⅛	4½	5⅛	94–96	89⅛
Brown (John) ... ... Ord.	1 (15s. pd.)	23/—17/9	12½	9⅛	2 3/32–3 5/32xd	1 1/16
Do. ... ... Cum. pref.	10	10⅛–9 1/32	5	5 1/16	9⅝–10xd	9
Cammell Laird ... ... Ord.	5	3⅜–2⅞	7½	8	3⅜–4⅛	5
Do. ... ... Cum. pref.	5	92/6–79/–	5	6	4⅛–4⅜	4 1/16
Do. ... ... Deb.	100	90½–84⅛	4½	5⅛	92–94	89 1/16
Dunlop (Jas.) ... ... Ord.	1	18/6–17/6	Nil.	—	1 3/32–1 5/32	1 1/16
Do. ... ... Cum. pref.	1	1⅛–⅞	6	7⅛	⅞–1	29/32
Fairfield Shipbldg Cum. pref.	10	10–7⅞	6	8⅓	—	7⅞
Fleming & Ferguson ... Ord.	10	20½–12¾	10	6 1/16	14½–14¾	15
Gray (Wm.) ... ... Deb.	100	100½ 100	4½	4½	100–102	100
Henderson (D. & W.) Cum. pref.	1	⅞–⅞	5	12	1/16–1/16	1/16
Richardsons Westgarth Ord.	1	3/6–1/9	Nil.	Nil.	1/16–1/16	1/16
Do. ... ... Cum. pref.	1	9 9–4/3	Nil.	Nil.	⅛–⅛	1/16
Do. ... ... Deb.	Stk.	70—58	4½	6⅜	55–58	69⅜
Simons (W.) ... Cum. pref.	10	10⅜–10	5	4⅝	10½–10⅝	10⅛
Stephenson (R.) ... ... Ord.	1	66⅛–53	Nil.	Nil.	—	—
Do. ... ... Deb.	Stk.	66⅛–63	Nil.	Nil.	—	—
Swan, Hunter & W. R. ... Ord.	1	19 10½–16 –	†10	10⅜	1 1/16–1	1 1/16
Do. ... ... Cum. pref.	1	19/9–17/9	5	5⅛	1 1/16–1	1 1/16
Do. ... ... Deb.	Stk.	90½–88	4¼	—	90–93	—
Thornycroft (John I.) ... Ord.	1	27/6–12/6	8	8	⅜–⅝	31/32
Do. ... ... Cum. pref	1	19 3–11/3	6	7⅛	⅜–⅝	31/32
Do. ... ... Deb.	100	94—91	5	5 1/16	88–92	94
Wallsend Slipway ... ... Ord.	1	1⅛–1⅛	10	—	1 1/16–1⅛	—
Do. ... ... Cum. pref.	1	20 —20/–	5	—	1 1/16–1 1/16	—

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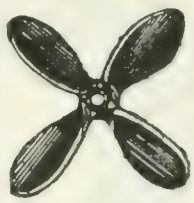

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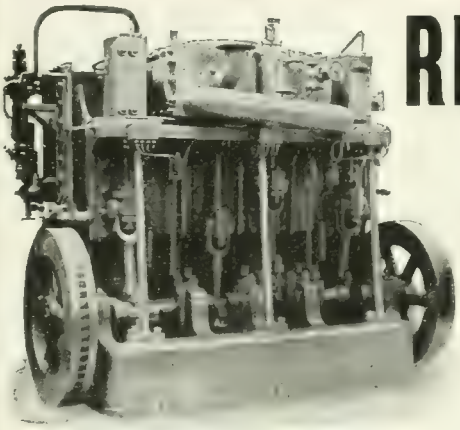

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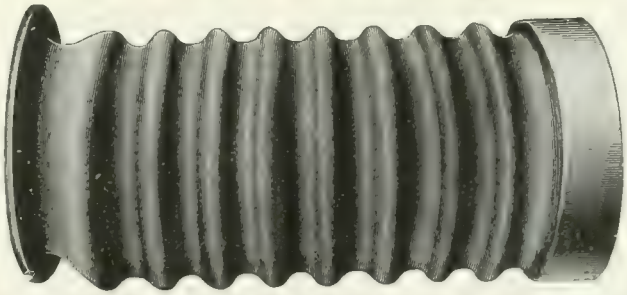

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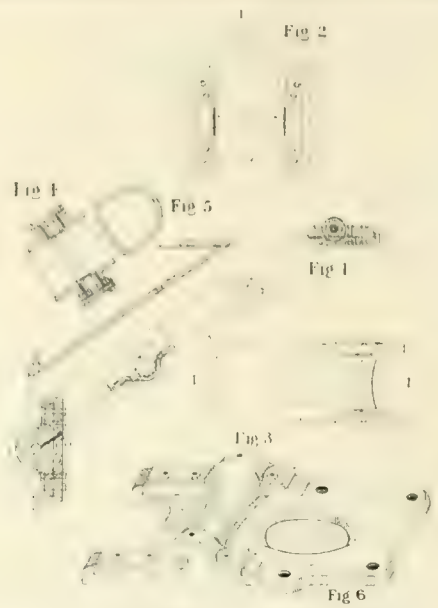

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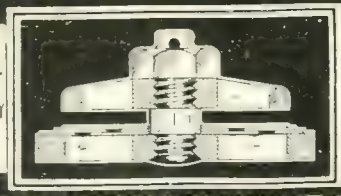

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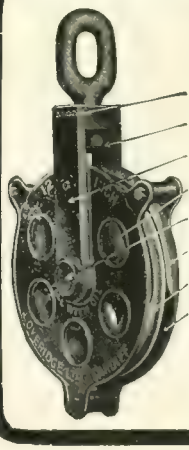

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Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

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White, J. Samuel, & Co., Ltd., East Cowes, I.W.

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Harrisons (London), Ltd., 66, Mark Lane, E.C.
Naval Colliery Co. (1897), Ltd., Cambrian Bldgs., Cardiff.
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Royles Ltd., Irlam, Nr. Manchester.
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White, J. Samuel, & Co., Ltd., East Cowes, I.W.

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Holmes, J. H., & Co., Portland Road, Newcastle-
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Chambers, John, Ltd., Lowestoft.
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Royles Ltd., Irlam, Nr. Manchester.

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Newalls Insulation Co., 31, Mosley Street,

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DRILLS
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Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.

ELECTRIC CRANES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [Edinburgh.
Mactaggart, Scott & Co., Ltd., Loanhead,
Mather & Platt, Ltd., Manchester.
[illegible] Victoria Street, London, S.W.
[illegible]

ELECTRIC DERRICKS—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.

ELECTRIC DYNAMOS & MOTORS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-
Mather & Platt, Ltd., Manchester. on-Tyne.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC FITTINGS—
Duncan, Churchill & Co., Grimesthorpe, Sheffield.

ELECTRIC HEATING & COOKING APPARATUS—
British Thomson-Houston Co., Ltd., Rugby.
McGeoch, Wm., & Co., Ltd., 28, West Campbell Street, Glasgow.

ELECTRIC LAMPS—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
McGeoch, Wm., & Co. Ltd., 28, West Campbell St., Glasgow.

ELECTRIC LIGHTING—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co.,' Ltd., Sunderland.

ELECTRIC-LIGHTING PLANT—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC MOTORS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC WIRES—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.

ELECTRICAL CONTRACTORS—
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow. [Glasgow.
Martin, W. C., & Co., 10, West Campbell Street,
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRICAL ENGINEERS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Bootle, Lancs.
Graham, Alfred, St. Andrew's Works, Crofton Park Road, S.E.
Holmes, J. H., & Co., Portland Road, Newcastle-
Mather & Platt, Ltd., Manchester. [on-Tyne.
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRICAL INSTRUMENTS (Ammeters)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-

ELECTRICAL INSTRUMENTS (Circuit Breakers)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

ELECTRICAL INSTRUMENTS (Relays)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

ELECTRICAL INSTRUMENTS (Voltmeters)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-

EMERY WHEELS—
Sterne, L., & Co., Ltd., Crown Iron Works, Glasgow

ENAMEL MANUFACTURERS—
Holzapfels, Ltd., Newcastle-on-Tyne.
Wailes Dove Hannaford Ltd., 5, St. Nicholas Buildings, Newcastle-on-Tyne.
Websters Ltd., Hull.

ENGINE (Electric Light)—
Belliss & Morcom, Ltd., Birmingham.
Greenwood & Batley, Ltd., Albion Works, Leeds.

ENGINES (Land)—
Chambers, John, Ltd., Lowestoft.

ENGINES (Marine)—
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
Central Marine Engine Works, West Hartlepool.
Chambers, John, Ltd., Lowestoft.
Hawthorne, R. & W., Leslie & Co., Ltd., St. Peter's, Newcastle-on-Tyne.
Howden, James, & Co., Ltd., Scotland St., Glasgow.
Perman & Co., Ltd., 82-83, Fenchurch Street, E.C.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

ENGINE & DECK STORES—
McGeoch, Wm., & Co., Ltd., 28, West Campbell Street, Glasgow.
Metallic Valve Co., Colonial House, Water Street, Liverpool.

ENGINE AUXILIARIES—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.

ENGINE FITTINGS—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

ENGINE-ROOM OUTFITS—
Grieve, T., & Sons, Bedford Street, North Shields.
Newalls Insulation Co., 31, Mosley Street,

ENGRAVERS— Newcastle-on-Tyne.
Brown, Robert, & Co., 12, Espedair St., Paisley.

EVAPORATORS—
Central Marine Engine Works, West Hartlepool.
Royles Ltd., Irlam, Nr. Manchester.
Weir, G. & J., Ltd., Cathcart, Glasgow.

EXTRUDED METALS (Brass, Bronze, Copper, Delta Metals)—
Delta Metal Co., Ltd., E Greenwich, London, S.E.

FANS—
Adam, J. M., & Co., Greenfield Iron Works, Dalmarnock, Glasgow.
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works,
Hogan & Wardrop, 2, Gresham Buildings, Basinghall Street, London, E.C.
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

FEED-WATER HEATERS—
[illegible]

FILES—
Brown, John, & Co., Atlas Works, Sheffield.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

FILTERS (Marine)—
Central Marine Engine Works, West Hartlepool.
Chambers, John, Ltd., Lowestoft.
Cockburns Ltd., Cardonald, Nr. Glasgow.
Mather & Platt, Ltd., Manchester.

FIREBARS—
Liverpool Patents Co., Ltd., Derby Square, James Street, Liverpool.

FIRE EXTINGUISHERS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Mather & Platt, Ltd., Manchester.

FIRE-FIGHTING APPLIANCES—
Mining Engineering Co., Ltd., Meco Works, Sheffield.

FLAGS—
Riley, Edward, & Co., Leeds.
Speedings, Ltd., Sail Works, Sunderland.

FLOATING DOCKS—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow. [Scotland.
Hamilton, Wm., & Co., Ltd., Port Glasgow,
Swan, Hunter, & Wigham Richardson, Ltd., Wallsend-on-Tyne.

FLOOR COVERING—
Docker Bros., Ltd., Metropolitan Road, Saltley, Birmingham.

FORCED DRAUGHT—
Adam, J. M., & Co., Greenfield Iron Works, Dalmarnock, Glasgow. [Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works,
Howden, J. & Co., Ltd., Scotland Street, Glasgow.
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

FORGING PRESSES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Mactaggart, Scott & Co., Ltd., Loanhead, Edinburgh.

FORGINGS—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Darlington Forge Co., Ltd., Darlington.
Hingley & Sons, Ltd., Netherton Iron Works, Staffs.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

FORGINGS (Bronze)—
Delta Metal Co., Delta Works, East Greenwich, London, S.E.

FORGINGS (Steel)—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Darlington Forge Co., Ltd., Darlington.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

FUMIGATORS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.

FURNACE BRIDGES—
Hamilton, A., & Sons, 13, Bute Crescent, Docks, Cardiff.
McConnell, A., & Co., Ltd., 60, Drury Buildings, Water Street, Liverpool.

FURNACES—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Deighton's Patent Flue & Tube Co., Ltd., Vulcan Works, Pepper Road, Leeds.
Leeds Forge Co., Ltd., Leeds.
Piggott, T., & Co., Ltd., Birmingham.

FUSES—
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

GALLEY GEAR—
Grieve, T., & Sons, Bedford Street, North Shields.

GALVANIZERS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

GAS ENGINES—
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Mather & Platt, Ltd., Manchester.

GAUGES—
Chatwin, Thos., Ltd., Gt. Tindal St., Birmingham.

GEAR CUTTING—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds

GEARING—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.

GEARS—
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

GEARS (Noiseless or Silent)—
British Thomson-Houston Co., Ltd., Rugby.
Brown, David, & Sons (Hfd.), Ltd., Huddersfield.

GOVERNORS—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.

GRINDING MACHINES—
Greenwood & Batley, Ltd., Albion Works, Leeds.

GRINDING WHEEL MACHINES—
Sterne, L., & Co., Ltd., Crown Iron Works, Glasgow

HATCH COVERS (Patent)—
Hogg-Carr Construction Co., Ltd., Newcastle-on-Tyne.

HEATING APPARATUS—
Ashwell & Nesbit, Ltd., Barkby Lane, Leicester.
Royles Ltd., Irlam, Nr. Manchester.
Saunders & Taylor, Ltd., 43, Lower Mosley Street, Manchester.

HEATING ENGINEERS—
Ashwell & Nesbit, Ltd., Barkby Lane, Leicester.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.
Saunders & Taylor, Ltd. 43, Lower Mosley Street, Manchester.

HELM SIGNAL TELEMOTORS—
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh

HIGH SPEED DRILLS—
Brown, John, & Co., Atlas Works, Sheffield.

HIGH SPEED STEEL—
Brown, John, & Co., Atlas Works, Sheffield.

HOISTS—
Mather & Platt, Ltd., Manchester.
Stothert & Pitt, Ltd., Bath.
Waygood-Otis, Ltd., Falmouth Road, S.E.

BUYERS' GUIDE—*continued.*

HOSE—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London, S.E.

HYDRAULIC CRANES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Brown Brothers & Co., Ltd., Rosebank Iron Works, Edinburgh.
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh

HYDRAULIC MACHINERY—
Armstrong, Sir W. G., Whitworth & Co., Ltd., Elswick Works, Newcastle-upon-Tyne.
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Waygood-Otis, Ltd., Falmouth Road, S.E.

HYDRANTS—
McKobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

INDIARUBBER—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London, S.E.

INDICATORS—
Robinson, A., & Co., Ltd., Bootle, Liverpool.

INDUCED DRAUGHT—
Davidson & Co., Ld., Sirocco Eng'n'g W'rks, Belfast
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

INSULATIONS—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W. [Liverpool.
Liverpool Refrigeration Co., Ltd., Colonial House,

IRON ROOFS AND BUILDINGS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

JOINTING MATERIAL (Manganesite)—
Hudson & Co.'s Successors, John, 15, Victoria Warehouses, Mansell Street, E.C.

LAMPS AND LIGHTS—
Grieve, T., & Sons, Bedford Street, North Shields.
Kaye, Joseph, & Sons, Ltd., Leeds.

LAUNCHES—
Chambers, John, Ltd., Lowestoft.
Crichton, J., & Co., Saltney Shipyard, Chester.
Leitch, John, & Co., The Ferry, Renfrew, Scotland.
Livingstone & Cooper, Ltd., Hessle, Hull.
MacLaren Bros., Ltd., Dumbarton.
Perman & Co., Ltd., 82-83, Fenchurch St., E.C.
Seamless Steel Boat Co., Ltd., Wakefield.
Thornycroft, John I., & Co., Ltd., Caxton House, Westminster, London, S.W.
Watson, J. S., Gainsborough.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

LAUNDRY MACHINERY—
Bradford, T., & Co., Salford, Manchester.

LAVATORY FITTINGS AND APPLIANCES—
Levick, John, Alma Street, Aston, Birmingham.

LEAD (Sheets and Pipes)—
Rimer Bros., Newcastle-on-Tyne.

LEAD (White and Red)—
Rimer Bros., Newcastle-on-Tyne.

LIFEBELTS AND BUOYS—
Spedings Ltd., Sail Works, Sunderland.

LIFTS (Window)—
Laycock, W. S., Ltd., Victoria Works, Millhouses, Sheffield.

LIFTS AND HOISTS—
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh
Waygood-Otis, Ltd., Falmouth Road, S.E.

LIGHTERAGE—
Alexander, W. H. J., St. John's Wharf, Wapping, E.

LIGHTERS—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow.
Crichton, J., & Co., Saltney Shipyard, Chester.
Watson, J. S., Gainsborough.

LIMEWASHING & DISINFECTING MACHINES—
Stonehouse Works Co., Ltd., Houghton Street, West Bromwich.

LOCKS—
Kaye, Joseph, & Sons, Ltd., Leeds.

LOCOMOTIVE TUBES (Copper & Brass)—
The Yorkshire Copper Works, Ltd., Leeds.

LUBRICATORS— [Cranstonhill, Glasgow.
McRobie, John, & Sons, 94, Elliott Street,

MACHINE TOOLS—
Campbells & Hunter, Ld., Dolphin Foundry, Leeds.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Scriven & Co., Leeds Old Foundry, Leeds.

MACHINERY NAME PLATES—
Brown, Robert, & Co., 12, Espedair St., Paisley.

MAGNESIA—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.

MARINE ENGINEERS—
Bailey, C. H., Newport, Mon. [Barry Docks.
Barry Graving Dock & Engineering Co., Ltd.,
Brown, John, & Co., Ltd., Clydebank, Nr. Glasgow.
Chambers, John, Ltd., Lowestoft.
Crichton, C. & H., Ltd., Huskisson Engine Works, Liverpool. [Southampton.
Day, Summers & Co., Ltd., Northam Ironworks,
Delegación de la Compañia Trasatlantica, Cadiz.
Diamond, Thos., & Co., Cardiff.
Doxford, Wm., & Sons, Ltd., Sunderland.
Elliot & Jeffery, East Dock, Cardiff.
Gray, Wm., & Co., Ltd., West Hartlepool.
Harland & Wolff, Ltd., Belfast.
Harris Bros., Ltd., Cambrian Dry Docks, Swansea.
Hawthorne, R. & W., Leslie & Co., Ltd., Hebburn-on-Tyne.
Hill's Dry Docks & Engineering Co., Ltd., Cardiff.

MARINE ENGINEERS *(contd).—*
Isherwood, J. W., 4, Lloyd's Avenue, London, E.C.
Livingstone & Cooper, Ltd., Hessle, Hull.
Mountstuart Dry Docks, Ltd., Cardiff.
Perman & Co., Ltd., 82-83, Fenchurch St., E.C.
Shearman, John, & Co., Ltd., Cardiff.
Simons, Wm., & Co., Ltd., Renfrew, Nr. Scotland.
Swan, Hunter, & Wigham Richardson, Ltd., Wallsend-on-Tyne. [Westminster, S.W.
Thornycroft, John I., & Co., Ltd., Caxton House,
Wallsend Slipway & Engineering Co., Ltd., Wallsend-on-Tyne.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.
Workman Clark & Co., Ltd., Belfast.
Yarrow & Co., Ltd., Glasgow.

MARINE GOVERNORS—
Aspinall's Patent Governor Co., 7, Strand Street,

MARKING-OFF TABLES— Liverpool
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.

MATTRESSES—
Stewart, Archibald, & Co., 40-48, Union St., Glasgow

METALLIC PACKING—
McConwell, A., & Co., Ltd., 60, Drury Buildings, Water Street, Liverpool.
United States Metallic Packing Co., Ltd., Bradford

METAL SPINNINGS—
Levick, John, Alma Street, Aston, Birmingham.

METALS (Patent)—
Bowran, Robt., & Co., Ltd., Newcastle-on-Tyne.
Delta Metal Co., Ltd., Delta Works, East Greenwich.

MOTOR BOATS—
Chambers, John, Ltd., Lowestoft.
Crichton, J., & Co., Saltney Shipyard, Chester.
Leitch, John, & Co., The Ferry, Renfrew, Scotland.
Livingstone & Cooper, Ltd., Hessle, Hull.
Perman & Co., Ltd., 82-83, Fenchurch St., E.C.
Seamless Steel Boat Co., Ltd., Wakefield.
Thornycroft, John I., & Co., Ltd., Caxton House, Westminster, London, S.W.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

MOTOR STARTING AND CONTROL GEAR— [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

NAVAL ARCHITECTS' SUPPLIES—
Walker, Jas., & Co., 11, Bishop Court, Anderston, Glasgow.

OIL CANS—
Kaye, Joseph, & Sons, Ltd., Leeds.

OIL ECONOMISERS—
Kaye, Joseph, & Sons, Ltd., Leeds.

OIL ENGINES—
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Edina Manufacturing Co., 19h, Broad Wynd, Leith.
Perman & Co., Ltd., 82-83, Fenchurch Street, E.C.
Swan, Hunter, & Wigham Richardson, Ltd., Wallsend-on-Tyne.
Thornycroft, John I., & Co., Ltd., Caxton House, Westminster, S.W.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

OIL-FUEL INSTALLATION—
Wallsend Slipway & Engineering Co., Ltd., Wallsend-on-Tyne.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

OIL IMPORTERS & BLENDERS—
Rimer Bros., Newcastle-on-Tyne.

PACKING—
Beldam Packing & Rubber Co., Ltd., 1 and 2, Gracechurch Street, London, E.C.
Walker, Jas. & Co., Ltd., Lion Works, Garford Street, West India Dock Road, E.

PAINTS—
Briggs, W., & Sons, Ltd., Dundee.
Cocks, Harry, & Co., Cardiff.
Hamilton, Archd., & Co., Possilpark, Glasgow.
Hoyle, Robson, Barnett, & Co., Ltd., St. Nicholas Chambers, Newcastle-on-Tyne.
Wailes Dove Bitumastic Ltd., 5, St. Nicholas Buildings, Newcastle-on-Tyne.
Websters Ltd., Hull.

PANELLING—
Stewart, Archibald, & Co., 40-48, Union St., Glasgow

PATENT HAWSE PIPE AND DECK FLANGE—
Hamilton, A., & Sons, 13, Bute Crescent, Docks, Cardiff.

PERFORATED METALS—
Braby F., & Co., Ltd., Eclipse Works, Glasgow.
Piggott, T., & Co., Ltd., Birmingham.

PIPES—
Stewarts & Lloyds, Ltd., 41, Oswald St., Glasgow.
The Yorkshire Copper Works, Ltd., Leeds.

PLANING MACHINES for Plate Edges—
Scriven & Co., Leeds Old Foundry, Leeds.

PLATE BENDING ROLLS—
Scriven & Co., Leeds Old Foundry, Leeds.

PORCELAIN ENAMELLED CAST IRON—
Levick, John, Alma Street, Aston, Birmingham.

PROPELLERS—
Billington & Newton, Ltd., Longport, Staffs.
Chambers, John, Ltd., Lowestoft. [Liverpool,
Crichton, C. & H., Ltd., Huskisson Engine Works.
Darlington Forge Co., Ltd., Darlington.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

PROPELLER BLADES—
Billington & Newton, Ltd., Longport, Staffs.
Darlington Forge Co., Ltd., Darlington.
Stewarts & Lloyds, Ltd., 41, Oswald St., Glasgow.

PUBLICATIONS—
"Shipbuilding and Shipping Record," Queen Anne's Chambers, Westminster, London, S.W.

PULLEY BLOCKS—
Bullivant & Co., Ltd., 72, Mark Lane, London, E.C.
Higginson & Co., 7, Hurst Street, Liverpool.
Loveridge, Ltd., Cardiff.
Wright, Joseph, & Co., Ltd., Tipton, Staffs.

PUMPING ENGINES—
Central Marine Engine Works, West Hartlepool.

PUMPS— [ing Works, Bedford.
Allen, W. H., Son & Co., Ltd., Queen's Engineer-
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Davey & Co. (London). Ltd., 88, West India Dock Road, E.
Dawson & Downie, Elgin Works, Clydebank.
Edina Manufacturing Co., 19h, Broad Wynd, Leith.
Hall, J. P., & Sons, Ltd., Peterborough.
Mather & Platt, Ltd., Manchester.
Weir, G. & J., Ltd., Cathcart, Glasgow.

PUNCHING AND SHEARING MACHINES—
Scriven & Co., Leeds Old Foundry, Leeds.

RADIATORS—
British Thomson-Houston Co., Ltd., Rugby.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.

RADIATOR TUBES—
The Yorkshire Copper Works, Ltd., Leeds.

REAMERS—
Chatwin, Thos., Ltd., Gt. Tindal St., Birmingham.

REFRIGERATING MACHINERY—
Hall, J. & E., Ltd., Dartford Ironworks, Kent.
Liverpool Refrigeration Co., Ltd., Colonial House, Liverpool.
Sterne, L. & Co., Ltd., Crown Iron Works, Glasgow

RESCUE APPLIANCES—
Mining Engineering Co., Ltd., Meco Works, Moorfields, Sheffield.

REVERSING ENGINES (Direct-Acting Type)— [Works, Edinburgh.
Brown Brothers & Co., Ltd., Rosebank Iron
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh

RHEOSTATS & RESISTANCES (all kinds)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

ROPE-CUTTING MACHINES—
Bullivant & Co., Ltd., 72, Mark Lane, London, E.C.

ROPES (Wire)—
Bullivant & Co., Ltd., 72, Mark Lane, London, E.C.

ROUND AND OVAL HOLE CUTTING-OUT MACHINES—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.

RUBBER GOODS—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London, S.E.

RUBBER HOSE—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London, S.E.

RUSTLESS IRON—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

SAFE MANUFACTURERS—
Whitfield's Safe & Door Co., Oxford Street,

SALOON LIGHTS— Birmingham.
Callender's Cable & Construction Co., Ltd., Belvedere, Kent.
Laycock, W. S., Ltd., Victoria Works, Millhouses, Sheffield.

SALVAGE—
Alexander, W. H. J., St. John's Wharf, Wapping, E.

SANITARY FITTINGS AND APPLIANCES—
Levick, John, Alma Street, Aston, Birmingham.

SCREWING MACHINES—
Chatwin, Thos., Ltd., Gt. Tindal St., Birmingham.

SHAFTING—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Darlington Forge Co., Ltd., Darlington.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

SHAPING MACHINES—
Greenwood & Batley, Ltd., Albion Works, Leeds.

SHEAVES—
Higginson & Co., 7, Hurst Street, Liverpool.

SHEERS, TRAVERSING (Land and Floating)—
Day, Summers & Co., Ltd., Northam Ironworks, Southampton.

SHIP APPLIANCES—
Linkleter's Patent Ship Fittings Co., 20, Percy Street, Tynemouth.

SHIP BROKERS—
[illegible], E.C.

SHIP BROKERS (Sale and Purchase)—
Hall, Edward, Cardiff.
Pinkney, Thos., & Sons, Sunderland.
Walford, Leopold (London) Ltd., 29, Gt. St. Helens, E.C.

BUYERS' GUIDE—*continued.*

SHIPBUILDERS—
Brown, John, & Co., Ltd., Clydebank, Nr. Glasgow.
[illegible]
Isherwood, J. W., 4, Lloyd's Avenue, London, E.C.
Livingstone & Cooper, Ltd., Hessle, Hull.
Simons, Wm., & Co., Ltd., Renfrew, Nr. Scotland.
Swan, Hunter, & Wigham Richardson, Ltd., Wallsend-on-Tyne. [Westminster, S.W.
[illegible]
Watson, J. S., Gainsborough.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.
[illegible]

SHIP CONSTRUCTION—
Brown, John, & Co., Ltd., Clydebank, Nr. Glasgow.
[illegible]
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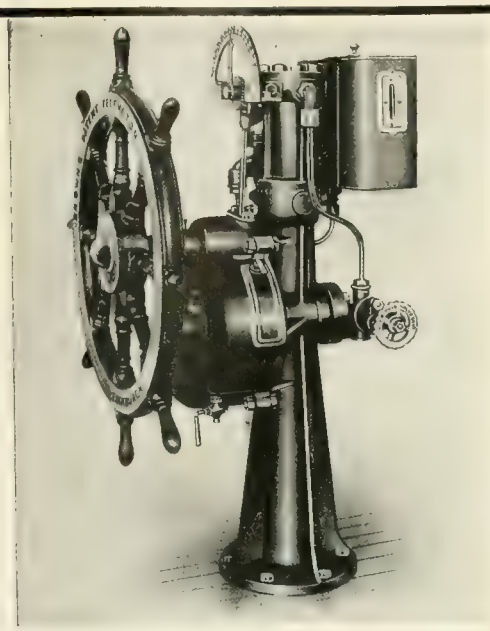

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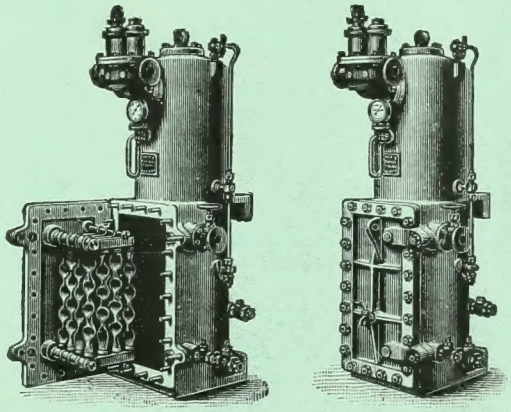

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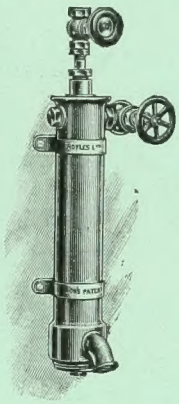

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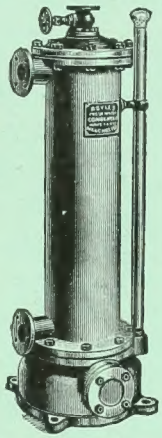

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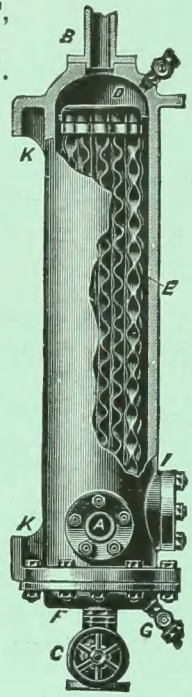

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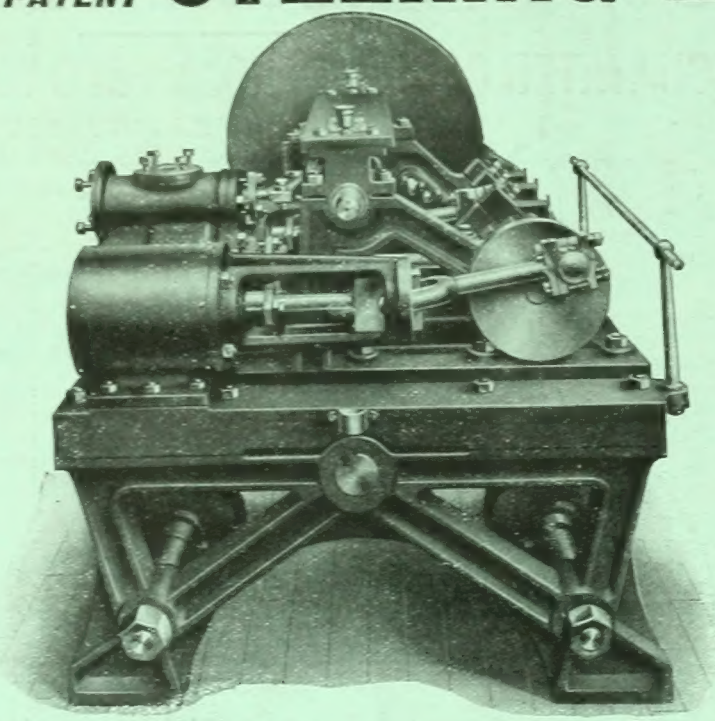

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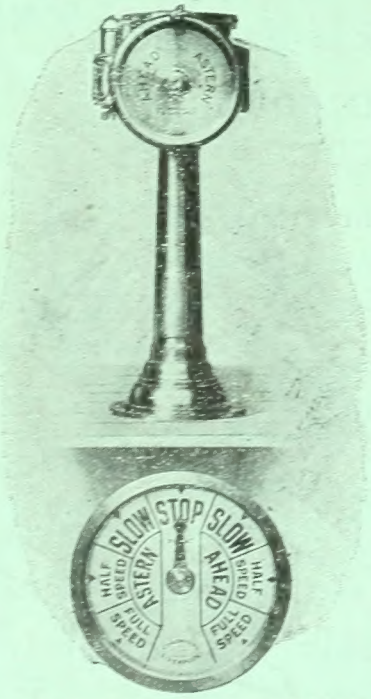

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